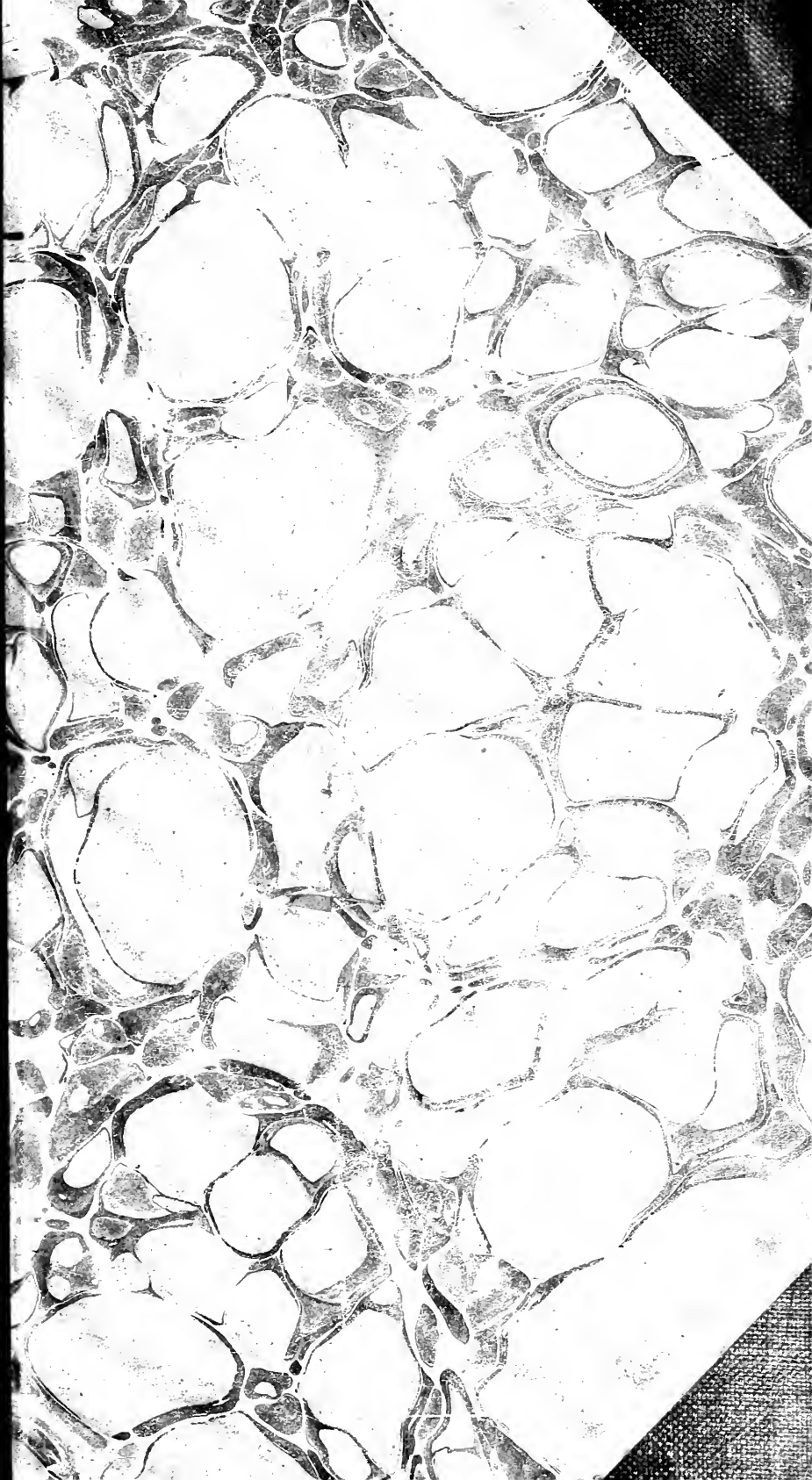
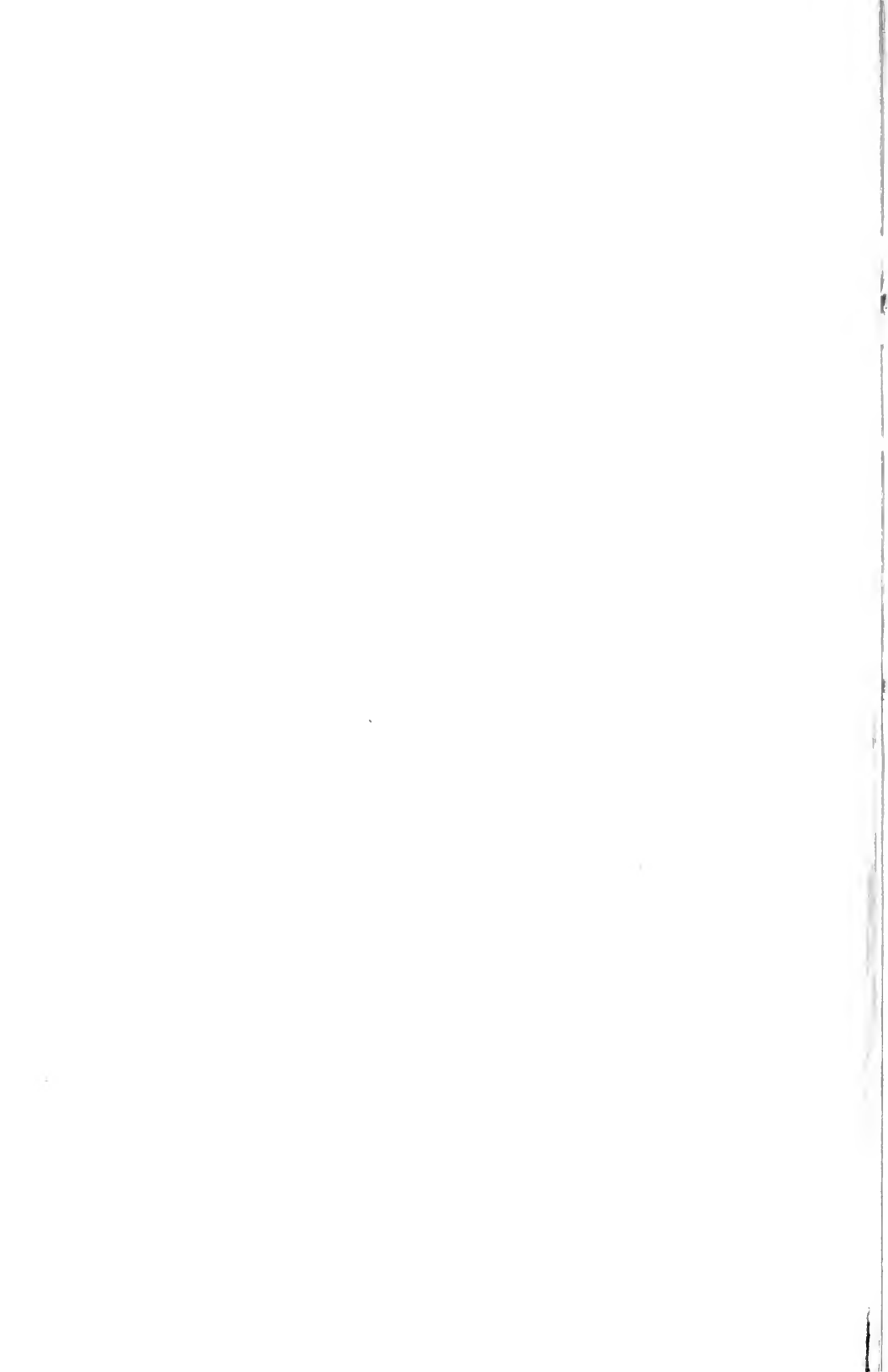




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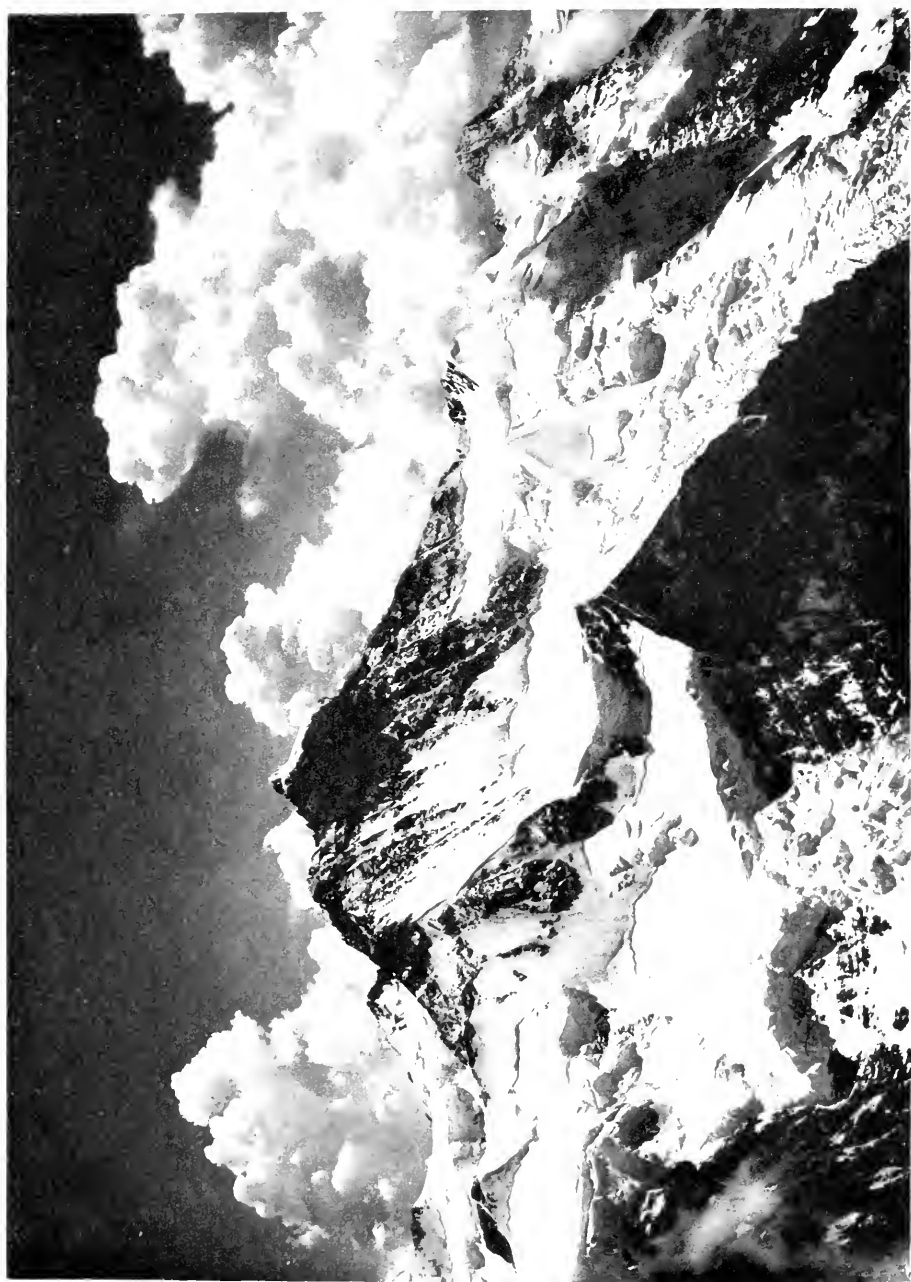
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The Journal

OF THE

Manchester Geographical Society.



OBSERVATIONS OF THE EFFECTS OF GLACIERS IN DERWENT VALLEY, DERBYSHIRE.

By E. M. WRENCH, M.V.O., F.R.C.S.

(Addressed to the Society in the Geographical Hall, on Tuesday,
October 22nd, 1907.)

It is probable that some of my audience, on reading the title of my lecture, may have thought that the subject was more suited for a meeting of the Geological than the Geographical Society, but since the difference in the titles of the two Societies is simply the difference between a discourse *on* the earth and a description *of* the earth, and since Geology may be called the Mother of Geography, being really the Geography of the past, I hope that what I am about to describe may not be considered unfitted to your attention. Indeed, I hope to show that whereas the outlines of continents and islands have been determined by the effects of long continued upheaval and denudation, so in a smaller degree the situation of villages and the density of the population in the Derwent Valley have been influenced by the Glacial Effects in the Peak of Derbyshire.

So much has been written and so many observations have been made since Dr. Buckland, about 1840, wrote, "for some time to come the Glacial Theory must occupy a prominent place in Geological investigation," that it might be supposed that 70 years after there was not much left to discover. Yet only two years ago, Dr. Sollas, Professor of Geology at Oxford, wrote: "Observers are still engaged in the investigation of Glacial phenomena, the subject still occupies as prominent a place as it did (in Buckland's time), and promises to do so for an indefinite time yet to come."

Vol. XXIV. No. 1, 1908.

This statement has induced me to choose a description of my observations, limited to the Derwent Valley for my discourse to-night. Sir Archibald Geikie, who, I think, I may call the greatest authority on Glacial Action in Britain, when invited, not many years ago, to give his opinion on the scratches on the Bloodstone at Bonsall, near Matlock, remarked that *had* he seen such marks on rocks in Wales or Scotland, he should have unhesitatingly said they were the result of glacial action, but since he could find *no other trace of ice action* in the Derwent Valley, he felt some doubt as to their origin. This was an excellent example of the old saying that "the eye sees what it brings with it to see," or rather that the unexpected is often overlooked: for not many years after, I discovered that scoriated rocks abounded in the valley and on the hill sides, which had been overlooked by Sir Archibald Geikie because his experience was confined to the effects of Glacial action on hard rocks, the granites of Scotland and the slates of Wales. The scratches on these hard rocks being seldom more than a fraction of an inch deep, whereas the ice marks on the softer gritstones of Derbyshire were usually half-an-inch, and in some cases over an inch in depth. The stone Sir A. Geikie was shown was limestone coated by chert. I had noticed these marks for several years, and attributed them to plough shares until I found them in such situations and so deep beneath the surface that they could not have been originated in that way. When having as it were my eyes opened I found that they not only illustrated the presence of ice action, but by their height above the river level and by their direction indicated the vast size of the glacier and the direction of the flow of the main stream and its lateral affluents. Then, being led to take an interest in the subject, I found that my own garden was a moraine.

I may, I hope, be pardoned if I make a digression from my subject, since I see some young geographers present, to congratulate them on the modern and improved method of teaching Geography, which 50 years ago was a dry committal to the memory of countries, states, or counties with their capitals, whereas Geography, as exemplified in *your* Society is so comprehensive that there appears to be nothing on the earth, over the earth, or under the earth of which it does not take notice.

Much has been said lately as to the value of classics in education. I noticed that at the meeting at Cambridge last week of the Classical Association, that the President, in his

address, advocated the study of Greek for the cultivation of the imaginative faculty in youth. It is not unlikely that he would look on the study of Geography as prosaic and materialistic, but I hope to show that by the exercise of the imagination, and the attempt to realize the former condition of, say, the Geography of Derbyshire, we may see the effects, not of the fights of mythical Homeric heroes, but of the giant forces of nature, moulding the face of the earth and rendering it beautiful and fitted for the occupation by man.

Talking of the use of the imagination reminds me that I have lately been accused of indulging it somewhat freely in connexion with a supposed discovery of a Roman Road near Brassington in Derbyshire. I defended myself by quoting that Prince of Scientists, Professor Tindall, who stated that some of the greatest discoveries in Science originated in the exercise of the imagination, or in other words, the attempt to explain the unknown by postulating an explanation and verifying it by observation and experiment.

I have often stood on the tops of the Derbyshire Hills, and in my imagination filled the valleys with glaciers, such as we see in Switzerland to-day. On one occasion, indeed, I had scarcely need to call up the image, for a dense fog occupied the valley (just where the ice should have been) with an upper surface so level that one felt tempted to think it would be possible to walk on its surface from hill top to hill top, as was the case when the valley was filled with ice.

The location of the marks on the gritstones (a good example is to be seen in the grounds of the Whitworth Institute, Darley Dale) indicate that the Derwent Glacier must have been as large as any now existing in Switzerland. I have traced the marks from Derwent down to Belper, 30 miles, and from the river level to near 1,000 feet above. The flow of such a glacier in a valley of such easy gradient, would not be more than a few inches per day or two hundred yards in a year, and if so, its progress would occupy several centuries and confirm Lord Avebury's calculation of the duration of the Glacial period lasting one hundred and fifty thousand years.

The effects of this mighty ice plough are everywhere visible. It has swept out most of the softer shales lying between the limestone and the gritstone, rendering the western escarpment of the latter, the formidable barrier to locomotion and in former days the bar or barrier between the Kelts and Norsemen,

between Mercia and Northumbria, and at the present day between the Episcopal Provinces of York and Canterbury. The deposition of its moraine has favoured the growth of the oak and beech forests that so long harboured wolves in the middle ages, and still influences the growth of the bracken and the daffodils, while the clean sweep of the carboniferous clays from the surface of the gritstone has left no soil for ought but the hardy heather and little food for any creature save the grouse.

The location of the villages depends much on the water-bearing glacial clays—which likewise provide depth of soil for the graveyards, as instanced at Hathersage, Longstone, Bake-well cemetery (where granite and other erratics are found) and elsewhere.

I have found boulders of both red and grey granite in both the Derwent and Wye Valleys, and both in places strewn with erratics from the rocks higher up the present river beds.

Lastly, many place names are derived from the Glacial features of the soil, such as *Tozenhurst*=Raggedwood, mentioned in Geological Survey as possibly glacial moraine, *Wormster*=Wormstall=Dragon's den. The river *Derwent*, clear water, from the clean *sweep* of the shale from the valley.

· * * *

“EXPERIENCES IN ZANZIBAR AND EAST AFRICA.”

By W. P. JAMES FAWCUS.

(Addressed to the Society on Tuesday, November 5th, 1907.)

I HAD hoped to have been able to meet you in the early part of the year, to give this short description of my experiences in British East Africa, but was unfortunately prevented from so doing by illness. My friend, Lord Hindlip, however, kindly consented at a moment's notice to take my place, and it is now with some diffidence that I appear before you, as I fear the possibility of repeating what he has already told you.

As no doubt you are aware, the Protectorate of British East Africa extends on the coast from the River Juba, which divides it from Italian Somaliland, southwards for about 400 miles to the boundary of German East Africa. It extends inland for about 600 miles to Lake Victoria Nyanza and the British Protectorate of Uganda.

It is intersected by the Equator; and the so-called Uganda Railway, slightly under 600 miles in length, connects its principal port on the Indian Ocean, Mombasa, with Port Florence on the Great Lake.

The island of Pemba and Zanzibar, situated respectively 60 and 130 miles south of Mombasa, although together with a strip of 10 miles in width extending along the coast, still nominally belonging to the Sultan of Zanzibar, are under British Government, and may be taken as part of British East Africa.

East Africa was known to the Greeks about the commencement of the Christian Era, and the extensive ruins, found along the coast, point to a considerable population and advanced civilisation in very early times.

Persians occupied portions of the country about A.D. 900, and the Chinese are known to have visited it repeatedly and to have carried on trade from the eighth to the fifteenth centuries of our era.

Vasco de Gama, the Portuguese explorer, visited Mombasa and Malindini in 1498, and a few years later the Portuguese took possession of several of the coast towns, including Zanzibar,

Pemba, Lamu, Kilifi, Faza, Pate and Mombasa. Their possession was disputed by Turks, Arabs and natives, which kept them in a more or less constant state of warfare, until finally the Arabs drove them out in the year 1729.

The dynasty of the present Sultan, or more properly Sezid of Zanzibar, who nominally rules Zanzibar, Pemba, and a ten mile strip of the East coast, was founded by the Inam of Omam Almed Bin Said in 1785, but it was not until 1832 that Sezid Said, his descendant, transferred his capital from Muscat to Zanzibar, and consolidated his East African Empire.

British influence began to be felt about the beginning of the last century, but it was not until 1890 that the present sphere was determined by treaty with Germany.

The interior of the country was practically unknown until the Egyptians in the reign of Ismail Pasha occupied part of Uganda, and in 1877 the Church Missionary Society sent their first party of missionaries from Mombasa.

Mombasa, the usual starting point for a visit to the country, may be reached from Marseilles by the French line, the Messageries Maritimes, the journey from London taking 18 days and costing £67. 10s. first class return. It can also be reached from Marseilles by the German East African Line, taking about the same time but costing slightly more. The same line embark English passengers at Rotterdam, but the journey takes a week longer and the Bay of Biscay has to be crossed. The British East African Line runs a monthly service from London and take a limited number of first class passengers, the whole journey by sea occupying rather over a month. For intending settlers who do not object to the longer journey by sea and who wish to economise, this line can be recommended, as the rate of passage is only £20. for the single journey.

The tourist having from four to five months at his disposal can, at a cost of about £250 to £300, take a trip round Africa by the German East African Line, visiting Egypt and Cairo: the Highlands of East Africa and Uganda, including a trip round Lake Victoria Nyanza: Rhodesia and the Victoria Falls on the Zambesi; the Transvaal: Natal, and Capetown; while the sportsman, if he has reasonably good fortune, can in rather less time and at the same cost, secure trophies of most of the big game of the world.

The Protectorate is full of interest to the tourist and the sportsman, there being few places in the world with more

magnificent scenery, and none with a greater variety and abundance of game, from the lordly elephant to the humble hare, while birds of all sorts abound. The interesting animals more usually met with are elephant, rhinoceros, hippopotamus, lion, leopard, giraffe, zebra, buffalo, and a variety of antelopes ranging from the Eland, a beast as large as a cow, to the Paa, or Dik Dik, about the size of a large hare.

The traveller by the railway, in passing through the country, sees from his carriage countless herds of antelope and zebras, with occasionally giraffe, lion and rhino. One of the most remarkable features of the country is the extraordinary brilliance of the plumage of the birds, and the colouring of the butterflies, flowers, and flowering trees.

All antelopes are edible, and many are very good; also of edible birds, many of which are in great profusion, I myself have shot partridge, guinea fowl, spur fowl, greater and lesser bustard, pigeon, several species of duck, geese and snipe, besides a great number of water birds, including the flamingo, which, contrary to generally accepted opinion, I found to be excellent eating.

British East Africa is inhabited by several distinct tribes of natives, of whom the principal are, on the coast, the Swahili, Galla, Somali and Pokomo. In the highlands the Wakamba, Kikuyu, Embo, Wandarobo, Masai, Nandi, Sotik and Lumbwa, while the land on the shores of Victoria Nyanza is inhabited by the large agricultural and pastoral tribe of Kavirondo. All the natives in the neighbourhood of European settlement are now peaceable and are gradually being taught to work, although on account of the simplicity of their wants, and the fertility of the country, it is still somewhat of a novelty to them. Since the slave trade has been abolished and tribal raids and wars put a stop to, the population has increased greatly.

Slavery still exists at the coast in a modified form, but it is now being done away with; this, however, will be difficult, as the old slaves strongly object to be deprived of the right which they have under Mahometan law to be maintained in their old age by their masters.

I heard an amusing story in Zanzibar. A young high-class Arab took service as a clerk with the Government, and, when asked why he was obliged to do so, replied that he could not help it, having inherited so many old slaves, whom he was

obliged to maintain. It seems strange to hear of a master having to toil to keep his slaves in idleness.

The freed slaves of the Zanzibar Government still insist upon calling themselves the Sultan's slaves, and performing without pay such duties as harvesting the Government cocoanut and other crops, and cutting grass for the Sultan's stables, in order that they may retain certain privileges to which they have been accustomed.

One of the greatest problems we have before us is the civilization and development of the native. He has never been accustomed to work himself, but has always lived on the exertions of his wife or wives: for the sake of progress this has to be, and is being, altered. The excellent work of the missionaries, more especially the Catholics, who, while teaching the men to work, teach the children in the schools, is worthy of all praise, but the process must be a slow one: the effects of centuries of sloth cannot be eradicated in a day, nor can the negro be taught in a moment that his wives are not merely chattels and slaves to be bought and sold like cattle (the average price for a wife is at present four cows). Kindly people are apt to question the right of the white man to possess himself of the country of the African, but if they appreciated the enormous improvement which has taken place in the condition of the native since he has been under European rule, they would alter their views.

The negro is certainly compelled to pay a small tax of from 1s. 4d. to 4s. per annum, which is expended in guarding him against robbery and murder. The imposition of this tax tends also to make him work.

While on the subject of the native, I cannot help saying a word about the Congo.

Most of us have no doubt read, and felt shocked at the horrible tales of atrocities which are represented to have taken place on the Congo. I myself felt so strongly on the subject, and was so moved by the published accounts, that I took a considerable amount of trouble to examine both sides of the question, with the result that I am relieved to be able to say I have come to the conclusion, although in parts of the country much has taken place in the past which is most regrettable, the white man has not been proved to have committed the atrocities with which he has been charged, and such reforms have been carried out that at the present time, on the whole, the state may

be considered to be as humanely governed as the majority of Africa. Anyone wishing to obtain an impartial account cannot do better than read the report of Lord Mountmorres, made to our Government after his visit in 1905, and recently published.

It is to my mind most regrettable that excessive zeal has lead those responsible for the conduct of the Congo Reform Association to depart from a fair and judicial statement of their case.

The principal feature of interest in British East Africa is its prospective agricultural and commercial importance and the field it offers to the settler and planter. While as yet it may be said that this country is to a great extent in an experimental stage, sufficient is now known of its possibilities and of the produce obtainable, to enable the colonist to determine with reasonable certainty the crops which he can cultivate with profit in different localities.

The land suitable for development may be divided into two classes, viz., the Highlands, or land accessible from the Uganda railway, having an elevation of above 5,000 feet, and the Lowlands, or rich tropical country on the shores of the Indian Ocean and Lake Victoria Nyanza, and on the banks of the great rivers Tana and Juba. The former district, which covers an area about equal to that of Ireland, is temperate in climate and healthy for Europeans. Although on the Equator the heat during the day is about the same as an English summer, the nights are cool and, in the higher districts, frost even is not uncommon.

Owing to its healthiness and general attractiveness, this district has, up to the present, received the most attention from settlers, while the tropical lands, being more a planters' than a colonists' country, have been neglected. Now, however, many are waking up to the fact that tropical cultivation can be expected to show a greater profit than farming in the more temperate Highlands, and land is being taken up.

The industries which have so far given the greatest promise in the Highlands, are cattle farming, including butter and cheese making, pig raising, and in the districts of between 5,000 and 6,000 feet elevation, coffee planting and the growing of various kinds of fibre. Besides these, excellent crops of Indian corn, wheat, potatoes, beans, European vegetables and fruits of all kinds are being grown, but it is probable that their

consumption will be limited to the country itself, on account of the high railway rates to the coast, which will prevent any goods, except those of a comparatively high value in proportion to their weight, from being profitably exported.

The products of the Lowlands, for which the greatest future may be anticipated, are cotton, rubber and fibres. Cotton has been tried with promising results at various places on the coast in the neighbourhood of Lake Victoria, and especially on the River Tana, as was to be expected from the conditions obtaining on this river, which is to all intents a repetition of the fertile valley of the Nile.

The Tana rises within about a hundred miles of one of the sources of the Nile itself, and like it, is subject to periodic floods, which bring down and deposit rich mud along the lower valley for a distance of nearly 300 miles.

Cotton has been grown at various points on the river, and has produced heavy crops of an excellent quality from Egyptian seed. As showing the opinions held by experts on the subject of cotton growing on the Tana, Mr. Robertson, the representative of the British Cotton Growing Association in East Africa, writes: "I consider the country on both sides of the Tana is ideal for cotton growing." Mr. Brand, late cotton expert to the British East African Protectorate, and now growing cotton on his own account on the coast, states that he considers the land on the Tana River to be the best he has seen. Mr. Linton, late Director of Agriculture for British East Africa, expresses even stronger views. *The Handbook of Cotton Growing*, issued by the Agricultural Department of the East Africa Government says: "The Tana River valley is most suitable for cultivation on a very extensive scale, but anywhere on the coast the climate in a normal year is favourable for the growth of cotton." In a letter from a friend in Egypt which I received at Mombasa, he says: "You will be interested to hear that during a conversation I had with Sir William Garstin, we touched on British East Africa, and he said he considered it the finest colony and one offering possibilities as great as Egypt and far superior to the Soudan: he considered everything conduced to make it the ideal place of the world: he seemed very enthusiastic."

The valley of the Tana also appears to be the most suitable in the Protectorate for the cultivation of rubber, cocoanuts, and Sisal fibre.

In an expedition I made up this river, I was astonished at the size and fruitfulness of the cocoanut trees, even as far as 50 miles from the sea. They appear to come to maturity sooner, and bear larger crops than anywhere on the African coast.

Rubber (the *Landolphia Kirkii*) is indigenous in the forests of the lower Tana, and is selected and sold by the natives in considerable quantities; it fetches a good price on the market under the name of Mombasa Ball rubber.

Para and other rubber trees, and sisal fibre, have also been planted experimentally and have done well. I did not myself see any tobacco being cultivated, but the natives grow a leaf which, in spite of being cured in a very primitive manner, is quite good to smoke. I purchased a small canoe-load of it for slightly over a penny per pound. Other native produce on the river is also remarkably cheap, and a standard rate appears to obtain all through the district we visited. Eggs sold at 4s. for 1s.; fowls at 4d. each; bananas at 1d. for 20; tomatoes and other vegetables at about $\frac{1}{2}$ d. per pound; sheep from 4s. to 5s. each.

Although at the present time, owing to the constant fighting and raiding of the past, the Tana valley is comparatively sparsely populated, the native Pokorno being estimated at not more than 10,000, extensive ruins show that at one time it must have supported a large population. Close to Kipini, at the mouth of the river, are the remains of a supposed Persian city, stretching 10 miles along the coast, and a few miles inland in the neighbourhood of Witu, there evidently existed one equally large; the coins and ancient pottery found prove them to have been places of wealth and commercial importance.

I propose now to show some lantern slides taken from snapshots I made, to illustrate the country I visited in East Africa. First, the arrival at Mombasa, next Zanzibar, then the Tana River, followed by the Highlands on the Uganda Railway, and finally methods of travel, native types, animals, and agricultural products.

THE UNKNOWN HEART OF CENTRAL AFRICA.

By the Rt. Hon. Viscount MOUNTMORRES.

(Addressed to the Society in the Geographical Hall on
Tuesday, January 7th, 1908.)

IN my journey I went up the Congo as far as its junction with the Ubangi, followed the Ubangi north up to the fifth parallel of latitude, and then made my way back overland by a semi-circle down to the Congo again as far as Stanley Falls. From there I struck out east across to the Uganda border, and came back down the Aruwimi and the Ituri to the Congo again, crossed it, and came back in a direct line along the length of the equator. During this journey I traversed one part at least that no other white man had crossed, the country between the Ubangi and the Ituri, and in several parts I was the only white man, other than the officials of the French or Belgian Governments, that had visited them. I came across races which astounded me with the very high degree of civilization and development to which they had attained. Many of these races have a civilization which is wholly and absolutely indigenous: they have learned nothing from the white man, because they have not as yet been brought in contact with him and, so far as is known historically, there has been no Arab influence brought to bear on them in the past. The people met with in the lower and middle Congo are fairly well known to every student of ethnology in this country. I think the only race of interest that I met with on my journey up-country was where I touched at Irebu, and made a journey round Lac Tumba, a large lake lying to the east of the point where the Congo runs nearly due north. There I found for the first time members of that vast tribe the Mongo, who furnish the principal inhabitants of the great equatorial forests. As is almost invariably the case, one finds that the forest dwellers are a low and less-developed type than the inhabitants of the plains and mountains which surround the forest, the fact being that in the course of time the weaker races have all been driven into the shelter of the forest by the sturdier races, who have taken the better lands outside.

And so you find that on the extreme north, lying between Lake Chad and the Ubangi, there is a sturdy, well-developed, virile race, whilst in the forest there are these undeveloped, backward people: and south of the forest, in the Kasai region and immediately north of Rhodesia, there is a sturdy, energetic, well-developed and comparatively civilized people. A curious thing is that these people to the north and to the south of the great equatorial forest have many traits in common. There is a close resemblance, for instance, between the Banza and Banziri people to the extreme north and the Kasai tribes to the extreme south, and the only explanation one can think of is that probably at some time there was a great movement of the Bantu people from the north, who, to all intents and purposes, completely surrounded the forest, when, spreading out eastwards, they struck the point where the Congo makes its extreme curve to the north: they avoided the forest, followed the course of the Congo round to the east, and came to the south, driving the original inhabitants into the security and shelter of the forest. It is of these more highly-developed races that I am going to speak, but just to give you an idea of what the forest-dwellers are like, and the way in which they live, I will begin by describing a Congo Village.

The huts, as a rule, are built in a continuous line along so-called streets, really large clearings. Instead of having any definite plantations, the bananas and plantains and even the tubers are set in the middle of these streets. The people themselves are not over clean, which is a remarkable thing to find among people who, on the whole, are remarkable for their cleanliness. Most of the natives of Central Africa are exceptionally cleanly in their habits and careful of their personal appearance. The Congo people, on the other hand, are on the whole an indolent race, and take very little care of their personal appearance. Every now and then an energetic chief takes the trouble to improve his village, and that was the case at Mwangi. You see quite a neat, clean row of well-constructed huts, each of which is provided with a little sliding door, and able to accommodate one person. As a rule in these villages the husband, the head of the family, lives in a hut at the end of the street, each of his wives having a hut to herself, the next hut to it containing her waiting woman or slave. The occupants of a group of huts sit outside almost all day long, sunning

themselves, and waiting for Nature to supply them with their few and scanty needs.

Leaving Irebu, I went up the Ubangi, and I found at one of the white stations there, one of the largest cemeteries for natives that I have seen in Africa. All the natives in Africa have different methods of burial, some of which are highly insanitary, consisting very often of throwing the bodies into the river. A great deal has been done in organising and persuading the natives to bury their dead in regular burial grounds, and the natives take considerable care of their burial grounds in some parts. In this particular case there was a large number of graves, each of which was covered with the personal appliances that were necessary during the life of the native who was buried there. There were cooking utensils, lengths of cloth, in many cases a large tin trunk, and various other objects distributed on the graves. Each one of these objects, whatever its nature, was damaged beyond repair, the natives saying the reason for this being to prevent the evil spirits from coming and making use of them, but I rather fancy it is to prevent the less orderly of their fellow-tribesmen from coming and stealing them and making use of them. In other parts of Central Africa I came across graves on which it was the habit for every passer-by to contribute some article, usually of food. Whenever a white man went past it was the custom for him to throw a cigarette or a cigar on the grave, and one could tell from the number of such cigars and cigarettes how many white men had been along that route. The graves in this part were beautifully kept up; everything deposited on them was left untouched, and there was no need to damage the things. All the little cooking utensils were kept at one end, the food supply at the other, and when the food decayed it was swept away as having been consumed by the spirit of the dead man on his journey to the other world.

On the lower Ubangi there is an extraordinary mixture of races, and one's task in trying to unravel their exact relationship is made all the more difficult by the fact that there is no very general agreement as to their names. You find tribes entirely different called by the same names by different authorities. For instance, the tribe at the village of Imesse, close to the White Station just mentioned is the Sango tribe, which are called by other writers the Dongo tribe, while the people who are called the Dongo by one set of writers are called the

Budja tribe by others. So you find, if you try to gain any information from works on these races, it is practically impossible to do so, and all one can do is to start on one's own and distinguish the people by the traits found existing amongst them. Whatever we like to call this race I should say probably that it is an offshoot of the great Bangala race which inhabit the northern bank of the Congo, and has penetrated up to the Ubangi. My reason for believing that is, first of all, the character of the buildings. They build their villages round little squares, very neatly, and without any ornamentation—a perfectly simple group of huts round a little square, which opens into the next by a straight alleyway, so that you can look down the central lane; and, as you walk along it, off each side open a series of little court-yards with huts all around them. Another thing is the shape of their heads. They are very wide-headed people and very finely built, except their legs. They are rather weedy in the legs, but they have wide shoulders, obviously bespeaking a nation of paddlers in the habit of living in canoes and paddling a great deal. Another thing is that you get for the first time in this people what is generally called the Sango tattooage, which consists of three little humps raised on the forehead. On the lower Ubangi only one little nob is raised on the forehead, just between the eyes. As you get farther up you get three nobs, and with those three nobs, all kinds of additions, according to the sub-tribes to which the people belong.

One reason why I think this tribe is closely attached to the Bangala tribe is that their huts are all palm thatched. There is a great division between the palm thatchers and the grass thatchers. Of course the explanation is one of locality in the first instance, but you will find that the palm thatchers in a neighbourhood of grass land still go to great trouble to thatch their huts with palm leaves, although they have plenty of grass round them: and *vice versa*, the grass thatchers, when they live in the forests or in a thick scrub, will go to immense distances to fetch grass to thatch their huts. So that the distinction, although originally undoubtedly one of the facilities of the localities in which the natives found themselves, is no longer so, but rather a tribal distinction. Again, the Bangala people almost invariably, after the thatching of their hut is complete, in order to prevent its being carried away by the tremendous tornadoes on the Equator in the immediate district in which

they live, have been in the habit, for many generations probably, of covering their roofs with little transverse bars which hold the grass in place. That is a thing one looks out for as a characteristic of these tribes. You find in a district where tornadoes are not severe that this peculiarity of covering the roofs with transverse pieces of stick, held in place by the weight of enormous full-length trees, still prevails, although probably there is no actual need for it.

There are also the typical Bangala chairs made out of trees which are cut and stuck in the ground, and which have certain very definite and regular shapes. A particular shaped fork is sought after, and you will find in one village perhaps dozens of that particular shaped fork until you begin to wonder how on earth so many similar forks could have been found in the neighbourhood. In another village you will find another pattern prevailing. I must also mention the typical dress of the Bangala, the ballet skirt as it is called. It is quite true that it has spread from the Bangala people to many other tribes, especially to those just a little further north of these people, but the people round Imesse invariably wear this dress, whereas in other parts it is only a very smart lady who has advanced to this degree. She has copied from her neighbours, much as we in England copy from France. The native women are almost invariably devoted with an extreme attachment to their children, and whilst many of them will go without bangles and armlets you will invariably find that their children are laden with every form of crude and barbaric ornament that they can possibly possess.

After leaving Imesse you find that suddenly you come across a people amongst whom it is the custom for every free woman, as soon as she gets to marriageable age (which out there is about eight or nine years of age), to wear an enormous brass or copper collar round her neck, which weighs many pounds, and which is forged on to her neck. Quite a ceremony is performed when this collar is forged on, and it can only be removed by removing the head of the wearer first. The collars are worn practically from childhood until death, and as they are never removed day or night, the wearers sleep in a pillow hollowed out to support the head, leaving the collar free. Very often it causes large sores and abscesses on the shoulders, but the people never think of discarding the collar. It is a very marked characteristic of these people; but you find immediately after

passing this group of villages that this particular characteristic disappears again as suddenly as it appears. This is really a Dongo village which has pushed its way down to the river bank, although the majority of the Dongos are agricultural people who inhabit the interior. This particular village, which is called Dongo—very often villages are called by the tribal name—is one of the largest native conglomerations that I came across. It has a population that cannot be less than 7,000. During two days I took the utmost pains to try and verify exactly its population by various means. I counted the huts, the wives, the children who were too young to work, and used various other means, and I came to the conclusion that 7,000 was a good deal below the actual figure—I think probably there must have been close on 10,000 in this one town of Dongo.

The women still wear the Bangala ballet skirt, but one woman added a little apron of string, and wore the big characteristic collar, which is a kind of dog collar, open in front, the edges being rolled immediately under the chin to hold the head up, and all round it, beaten on to it, is a supporting rib which prevents it being opened once it has been forged on. It gives the woman a peculiarly graceful and dignified carriage, but it is certainly very uncomfortable.

Dongo himself, when I visited the town, was absent, hunting in the interior, and his daughter entertained us and showed us about. The women wear a number of brass rings, carefully graduated, the smallest of them weighing probably not less than $1\frac{1}{4}$ lbs., and the largest from $2\frac{1}{2}$ lbs. to 3 lbs. You can imagine, therefore, the weight they have to carry about on their arms, and the intrinsic value of these rings, for which the brass has been imported at some time from white men. It has made its way slowly up the river, passing probably through hundreds and hundreds of hands before it reaches its final destination. In that part of the world transport is the principle item of cost, and the intrinsic value of these brass bangles to the native is enormous. I asked one woman how many brass rods she calculated went to make a collar she was wearing, and she told me (and I think she was probably right; one can verify it fairly accurately by knowing roughly the weight of the collar) about 6,000 rods, which represented a value in English money of a little under £20 for that one collar. That means to say that out there to the native woman it was a very large fortune indeed: in fact, the womankind carry their fortune on their

backs undoubtedly. The fortune of the men is the number of wives. When a man gets rich he buys more wives; when he gets poor he sells them again.

One peculiarity of Dongo, which makes it almost certain that it belongs to the tribe which is generally recognized by that name, is this, that it is very exactly divided into three distinct wards, the inhabitants being separated by a kind of caste distinction. I believe that the Dongo are the only people amongst whom this caste distinction exists in Central Africa. Everywhere the forging of metals is either an object of veneration or an object of disgust and loathing; it either represents the highest type of labour in a village or the lowest.

That is the only other instance in Central Africa of anything approaching to caste; but in Dongo, and in all Dongo villages, the villages are distinctly divided into three parts. One part represents the labourers—in this case, being a river village, the fishing people, who devote themselves to providing nourishment for themselves and the villagers, and for trading purposes with the interior. The second section are the manufacturers, the workers in metal, and the makers of cloth and pottery, in fact, all the textile manufacturers of native life. The third section are the warriors. The men are armed with enormously long spears, about 10 feet in length, and they are very skilful in throwing them. Their other arms consist of large-handled knives, in ornamental scabbards, bound with copper wire. They are protected not only by their shield, but by a strange kind of cuirass made out of buffalo hide. It is slung on the shoulders and protects their back and spear arm, the right, so that in that way they are practically safeguarded against attack by native weapons. The Dongo are a people who have reached a considerable degree of development both in arts and manufactures. When we arrived at Dongo we were rather doubtful of the natives because we were informed that the only white man who had, in recent times, visited the village, a missionary, had been eaten, and had not since been replaced. We felt a little timid, but they extended a most hearty and cheery welcome to us. The day I arrived there, a white man, who had marched across from the interior, an official of the Belgium Government, arrived in the village also, and before I left he was installed there as a representative of the state authority, and was on the most excellent terms with the chief's daughter, the chief being absent, but I have no doubt that on

his return the Dongos would settle down to be law-abiding members of the community. And they ought to be, because their trade is very highly developed. They understand all the ordinary principles of interchange; for instance, the fishermen in this village exchange with agriculturists in the interior, and the pottery, cloth, and metal work is exchanged for fruit and produce grown at other parts of the river.

As artists they have also advanced very far. The house of the chief is entirely ornamented with carved wood, a kind of ebony, but not as hard though almost as black, which grows freely in this district. The wood is most highly polished, and ornamented with rude sculpture work and carving. On the front of many of the houses are panels, left plain, on which rough pictures are pencilled with burnt wood. The meaning and purpose of the drawings one could easily understand. How recently these people had been addicted to cannibalism was only too evident on the occasion of my visit, because at every street corner in the village there were one, two, three, or more human skulls half-buried in the ground, each of which represented a cannibal feast. It was their habit, when they had had a particularly cheerful evening in dining off some fattened slave, to half bury the head, in order that it may recall the pleasant evening they had spent together. Some of these heads were quite newly interred; and I think there is no doubt that if one could arrive quite unexpectedly amongst the Dongo people, one might surprise them, even to this day, in the midst of a cannibal orgy. But, as I say, they are a people who will probably settle down as many other savage people in this part have, to the ordinary principles of civilisation.

Another village we visited was in the transition stage, probably the last of the Dongo villages proper, where all the ladies still wear the collar but very few of them the Bangala skirt, which has not got so far as this place. Most of the roofs of the houses are palm thatched, but many of them are beginning to be grass thatched. It is a transition village, made up, no doubt of members of different tribes who have left and intermarried. There is no doubt that cannibalism all along this part was very prevalent until quite recent times. One of the most extraordinary things is that almost everywhere I went, even where the white man himself has not been, or where he is little more than a legendary figure, the native is already ashamed of cannibalism, whereas in times past he was openly

addicted to it. One old fellow told me that the meat of a white man was much better than the meat of a black man because it has a salt taste. All along the river we were greeted at every stopping place by large crowds, who used to come down to the water's edge to meet and cheer us. If ever we wanted paddlers there was no difficulty in finding them. At some places, for instance near Yakoma, the men were so energetic and keen to do the white man a service that they all ran along the bank, leapt into the water, came swimming out to my canoe, and forcibly dispossessed my own paddlers of their paddles, throwing them into the water, and themselves took on the task of paddling: just as in this country the custom still exists in many parts on the return of a bride and bridegroom to unhorse the carriage and drag it along by human power. The idea underlying their action was exactly the same: they wished to show me honour, and the way they did it was to work for me and bring me themselves into their village. Their enthusiasm was very agreeable in its intent, but apt to be rather awkward and productive of unpleasant consequences in its execution, because the chances are that if you have 20 or 30 lusty savages climbing into a canoe and having a hand-to-hand scuffle with the canoe men, if the canoe is not swamped your belongings will get fairly wet.

The Sango are another and quite distinct people. The difference in the villages is at once apparent. They are not built in squares but in long, perfectly straight lines, each debouching on the river. The people are entirely a riverine people: they live by fishing and paddling, and are not found in the interior. One of two villages that have pushed into the interior are completely hidden in the dense bush, and the paths leading to them are skilfully disguised so that a stranger would not find them. They appear, as they have advanced into the interior, to have got shy and timid, whereas on the river bank, which is their domain, and in which they are in their element, they are nothing of the kind. They build large villages showing to the river, and on the approach of every canoe they come out to greet it, or, no doubt, if it is an enemy, to attack it. They are very far from a timid people when they are on the river bank. Nearly all the huts have the characteristic thatch I have mentioned: but in some villages it is wholly absent. As a rule you can tell a Sango the minute you see him by the three bumps, of which we saw the first signs in the Bangala people lower

down the river. These villages are of enormous length but of no great depth, the object of each member of the population of a village being to be as near the river and the fishing as he possibly can. These villages consequently extend along the river's edge sometimes for a matter of miles.

It is the habit of these people never to move their villages bodily. When the ground on which they can grow crops is used up or when the fishing has gone away from them, or when they want to improve their village they let one end fall into ruins and go on building at the other end. Before you come to a Sango village you come to a large clear space, with ruins of old huts in it, while at the other end the village is continually moved forward, through the bush, and no doubt that accounts in a very large measure for the very healthy condition of the tribe. As a rule the Sango people are fine in physique and exceedingly healthy, with very little disease. Their children especially are amongst the healthiest children that I saw. Most of the children of Central African races are subject to rickets; in fact, a large majority of them would do as examples, in a work of pathology, of typical cases of rickets. There is no doubt that the healthiness of the Sango people and their children is largely due to the superior sanitation of their villages, owing to this constant process of moving which goes on amongst them.

They build their huts like long sheds. The whole street is built from one end to the other; stakes are driven into the ground, bamboos or palm branches are stretched across to form the roofs, and transverse pieces are put on which are thatched with grass. The work requires a considerable amount of skill. The villages, which are laid out absolutely symmetrically, are exceedingly strong and well built, and the pace at which they are constructed is simply astounding. In this part of the country I spent two days in the interior, and stayed a couple of days in the village itself, so that altogether I was there four or five days. From the time that I first saw the place, to when I left, the people had entirely constructed three of these long streets, that is to say, six rows of long sheds ready for thatching. Every joint in the huts is tied with little pieces of vine creeper, so that the detailed work is enormous, and yet they do it with a rapidity that could not be equalled by the ordinary European. It means that this particular form of labour has reached a very high stage of development.

Now we come, quite suddenly again, to an entirely different people. Here we break on the Upper Ubangi. The usual distinction between the Upper and Lower Ubangi is between the span-roofed huts and the beehive or conical huts; you never see a span-roofed hut in one of these villages, or one of the beehive huts in one of the span-roofed villages. You can therefore be absolutely certain that you have come to an entirely different and distinct people. That is borne out when you see the people themselves, because they are a wholly different race in every respect. In the first place, the type of countenance is different. They are not, on the whole, bad-looking; they are nothing like as coarse-featured, for instance, as the Bangala, or Sango, or Dongo; they are a much higher type of race altogether, and much finer built, so far as their lower limbs are concerned. The feature that distinguishes them above all in their characteristics is that they are the most artistic of all races in Central Africa. They are the Banziri. Every man amongst them has his hair plaited in tiny plaits, with the smallest beads that he can obtain. The beads travel right across Africa from tribe to tribe, from the nearest trading station of a white man. They plait these beads, as a rule, red and blue, in a very artistic fashion into the hair, forming a complete cap, very often with long pieces hanging over the ears, and almost always with two little tablets hanging down in front. Nearly every man in the race does that with his hair. Then they have an extraordinary love for colour. Most of the races, especially those along the Ubangi, prefer dark maroon red or very dark blue. If you have a large selection of cloth, as you must have when you are travelling, you will find there is a great run on the dark reds and dark blues until you come amongst the Banziri, and then all the pieces which you had been despairing of being able to use at all, the light blues and greens, and all other gaudy colours, are suddenly in great demand. Nothing pleases a woman so much as to have a long length of vivid red cloth to wrap round her body.

The villages of the Banziri differ again in another respect from every village we had seen up to this point, viz., that there is no attempt at building them along streets—there is no mathematical symmetry about them at all. They are scattered about in the plantation, and very often they are almost hidden and smothered with trees. There are wide spaces between them, and very well-kept pretty little paths, trodden down by travel.

Along both sides of the paths the grass grows freely, and the general effect is far more picturesque and attractive than those of the races that build long, straight streets. The same characteristic is true of the other kind of huts we come across—the conical huts. The conical hut varies enormously, and in its variations we distinguish the different tribes. For instance, there is the hut which is built straight from the ground; there is no attempt at a wall: it is all roof. But whereas in many parts there are no walls, in other parts there is a small wall and the roof springs from that. The huts also vary very much in their height. The floor of the hut is raised to a considerable extent above the surrounding ground, and the walls are carried up above that again. So that there are half-a-dozen different varieties of these conical huts, each denoting a different tribe, but the conical hut, as a whole, denotes always the great Banza people. The Banza people are one of the largest groups in this part of Africa. The density of the population here is absolutely appalling. One passes all day long through a series of villages along the river banks. The villages are no longer the shallow villages of the Sango, but extend away into the interior as far as the eye can see. I went many days' march into the interior, and for the whole way one passes through a village, then a plantation, a little bit of open space, and, perhaps, after an hour's walk, there is another plantation and, another big village, and so you go on, one village succeeding another in practically unbroken succession. Between Mokoangai and Banzyville, to all intents and purposes, it is one vast town the whole way along the banks of the river. These people live entirely on fish and on their crops. They have no chance of getting game, because it has been driven by this enormous population to such a distance from them. Altogether, unlike the Banziri lower down the river, who are a very sporting people, they take no interest whatever in hunting, and are practically a non-hunting people. This is the result of their being town dwellers.

Another result of dwelling in these large conglomerations is that all the industries have reached a high pitch of development, their iron, copper, and metal working more particularly. I saw some beautiful work being made in the forges in nearly all these villages. I watched and saw how it was made: and the skill that is displayed by the natives in the manufacture of elaborately chased and fretted knives, in binding handles in an

ornamental fashion, and inlaying them with lizard skins, and generally turning out objects of beauty, is extraordinary. Their only appliances are, as a rule, a large stone for an anvil, and a smaller stone for a hammer, which is often enclosed in a creeper handle. Such a thing as a cold chisel in the way of a cutting instrument is absolutely unknown, and the only cutting instrument they use is practically a soft iron instrument to cut the red-hot iron and fret it into patterns. You can imagine the time it would take to manufacture a knife in this way by anyone who is not highly skilled. While in one village which I visited, the chief, in order to do me honour, and seeing I was interested in the subject, ordered all his forges to start making patterns of spears and knives. I stayed with him two nights and the intermediate day, and during that time the forges were going night and day, so the noise in the town was terrific. When I came to leave he called all the metal workers together, and they came bringing with them the result of their labours. I cannot guarantee that all the spears and knives were made during the time I was there, but they were presented to me as having been made during that time, and the total was 52 knives with large handles all beautifully ornamented, and 36 spears. Everyone of the spears was bound with copper wire, and inlaid with lizard skin at intervals, and the handles were beautifully carved. Even supposing that only half of them were made while I was there, it shows that these people have reached a degree of skill in metal working which I do not think could be equalled by white people unused to their primitive appliances. It is just the same in building; the skill they display and the pace at which they build their houses are simply extraordinary.

We now come to the tribe of Baya, a large sub-division of the Banza people. These people along the river are most skilful in the manufacture of all appliances connected with the fishing industry. The fish nets and fish traps have reached an extraordinary perfection. The nets which are made on the lower Ubangi by less developed people are principally made out of creepers, the bark and tendrils of trees. A large square is made on a frame, and the tendrils are stretched backwards and forwards to form rude meshes. Some of them are knotted at the corners, while others, instead of being knotted, are interlaced like a child's kindergarten mat. But amongst these Banza the nets are almost wholly made of string, some of it

plaited, some of it twisted: and some of the rope they make I should think must be as good as any rope made in the world. It is close twisted and very strong, and is made out of the grass which abounds in the neighbourhood. The nets are made of string, and all the meshes are knotted in very much the same way as an ordinary European net would be made. In addition to these nets, they use traps of all kinds, including a trap that is exactly similar in pattern to our lobster pot or eel trap. They are made in exactly the same way, and, from their appearance, might have been imported from Europe, although we know that is quite impossible in this locality. Another ingenious arrangement is the fishing platform or weir, which is constructed to support the lobster pot traps. On each side of some rapids two big poles are put up, connected by a cross pole; suspended from this by enormous creepers are the fish pots, which hang in the rapids. The whole of the structure can be tilted by pushing on the extreme end, so that the bar is tilted, and all the fish pots swung ashore. When they have been emptied they are swung back again. It is one of the most ingenious contrivances I ever saw. Another arrangement is a weir, very much on the same principle as the weirs we use in this country, with rudely constructed water gates, which can be lifted up. A platform is built across the top on which a man can walk; he lets a tremendous flow of water into a particular channel which is completely surrounded by a net; all the fish coming down from above are forced into the channel and pass into the net. This weir arrangement is, I believe, one of the most successful traps for catching fish, but it is only applicable to waters that are not used for the purposes of transport, and the consequence is it is only in the smaller streams it can be used.

The Baya people, for the most part, are tattooed, but they have no distinctive tribal tattooage. One finds amongst the Banza people, as a whole, that there is a tribal tattooage, but amongst the Baya, which is simply a sub-division of them, the tattooage is almost entirely absent. At the most, it consists simply of a bit of the Banza tattooage: it is a large nob, which falls down in front from the middle of the forehead, a small nob above it, and a series of four nobs across the eyebrows. One or two of them, more particularly the women, go in for tattooing the shoulders. This tattooing is remarkable for the beauty of the designs at which they have arrived. Many of them resemble very closely conventional designs taught in art

schools in this country, and amongst others I came across was the regular *fleur de lis* of France enclosed in an empire framework. How it got there I do not know, it may have been brought in some cutting of a paper which somehow reached them, but it was so European that I do not believe it could have originated in the locality. The tatooing is effected in the following manner:—The skin is cut, turned back and filled with a fibre extracted from between the bark and the main wood of a particular tree, which is pounded and dried: it is put into the wound, and the wound is then sown up over it. In course of time it suppurates, a little abscess forms, the flesh begins to hang down, and this wadding from inside forces its way out little by little. In one village at which I stopped on my way up-river, the medicine man, the tattooer, was then paying his annual or semi-annual visit, and all the boys in the place were undergoing tattooage. You can understand that the noise most of them made over it was considerable, though a large number of them bore the operation with extraordinary fortitude. This man, with an extraordinary native knife, would cut three great gashes in the forehead; he would then put in the wadding, and draw the flesh over it, and with two bits of tendrils of creepers tie up the wound. It was then left alone. I suppose the patients would probably pass many weeks with these terrible festering sores on the face. In some places the natives are simply tattooed all over; the whole face and the body is one mass of tattooage. In this particular part the tattooage is strangely absent.

The capital, Baya, itself is called a village, but it would be more accurate to call it a town divided into large wards. Over the whole town Baya, the chief, himself presides, a man who has been in his time much in contact with the white people, both in French and Belgian Colonies. He dresses in quite Europeanized fashion, and has introduced into his village many European methods. He is about two days' march from the nearest white post, and the town is extraordinary for the cleanliness that prevails there. You have amongst the whole of the Baya people another burying habit. When a man dies, if he is a big Chief he is buried in his hut: if he is a chief of less importance, immediately outside the door of his hut: and in either of these two cases the hut is given up to the use of the dead man. But in the case of the ordinary private citizen of the village, he is buried some little distance in front of his hut.

A regular family tomb is established, and little shelters are erected. A forked stick runs up at the corner, on which are hung the various trophies of the chase, which are highly prized because this is not a hunting or sporting people. The consequence is that if a man has killed any animals he keeps the trophies, just as a white man would keep them. Very often he decorates the top of his hut with them: for instance, if the native has shot an antelope with horns, he keeps them in front of his house. When he dies all these things are hung on the branch at the corner of the tomb. Then there is a shelf on which are deposited all the spears, knives, warlike instruments, agricultural implements, and everything of that kind; and below that again are his domestic appliances, the calabashes in which he kept palm oil, palm wine and water. His cooking utensils of all kinds are stored there, and the members of his family keep up the tomb with a considerable amount of care. Very rarely a day passes but you will see one of the deceased's widows pottering about it, cleaning it up and setting it in order; in fact, one or other of them will generally devote her whole time to the upkeep of the tomb.

In this tomb one meets with every style of architecture. The dwelling-houses of the women always remain the same, a low-walled conical hut, but everything else in the village is built in a variety of styles that is puzzling.

In all these villages there is not only the dwelling-house, but in front of it a day shelter in which the mankind sit, and smoke, and talk, and generally pass their time. Most of these Baya people are energetic and industrious, but at the same time there is alms a great part of the day in which they have nothing particular to do, and then they occupy their shelters. The shelters themselves are most picturesque buildings. They are all grass thatched, and one which I noticed had little minarets and spurs at each end. The roofs instead of being built perfectly symmetrically, have a kind of waving edge at the two ends. The general effect of this town of Baya is exceedingly pretty.

The influence of civilization is making itself felt. Baya went and lived in the white post for about a month and watched the brickmakers at work. He came back to his village, and from what he had seen he started his people to make bricks, and to build a brick house. The walls of the enormous guest house in which he receives his visitors in quite ceremonious state, are

built entirely of brick. Then he thought he would be more ambitious. He heard that in another white man's post, at the Dutch factory, about a fortnight's travel away, there was a two-storied house. He promptly started to build a two-storied house, but I am sorry to say that when the walls had just got above the first floor level they were so out of the true in some places that the bricks were falling off them as the mortar dried. He will probably never realise his ambition to build a two-storied house, but he was very successful in his first essay at brick building. This is interesting only as showing how quickly these people adapt themselves, because the whole of these people held out for a long time against the white man. In the middle of this village there is a little group, apparently of Banziri people, which I was absolutely unable to account for, living in beehive huts. There was a little strip of plantation in between. These towns are largely made up of groups of villages completely shut off the one from the other. Two or three minutes' walk from the nearest hut in the Baya village there appears to be a Banziri village. How it came to happen I do not know. They call themselves Bayas, and they are the subjects of the chief Baya, and in every sense politically and socially they are Bayas, but by origin I should think from the type of building they must be Banziris, unless Baya's father, seeing the Banziri hut, resolved to copy their style of architecture, and made this attempt. The difficulty of getting information about anything in the past is very great, because ordinarily the healthy man lives to only 37 or 38 years of age at the most. A man anything over 40 is an old man. The consequence is that by the time a man has grown old enough to remember anything, he is dead before he can hand it on as intelligent history, in our meaning of the word. I could not get particulars of anything that happened in the days of Baya's father's boyhood, or whether it was he who introduced the new style or his grandfather. The natives had many stories as to why these huts existed, but there was no reliable information to be obtained, and no two natives told the same story.

The minarets or curious caps which they put on the top of their conical huts constitute another feature of the Baya buildings.

Amongst the Gembela, another division of the Banza, these things develop into the most elaborate ornaments, some of them ten or twelve feet in height, enormous structures resembling

the pagodas that you see in China. They have a sort of umbrella shape, with antlers hanging from the corners, giving quite a pagoda-like look to the house. The town of Baya having apparently copied the architecture of all the neighbours round about, has copied the pagoda effect in some of the huts.

The degree to which the social organisation of the place has been developed is remarkable. We have heard a great deal recently about the underfed school children of England, and here is the Baya solution of the difficulty. All the younger children in each ward or group are kept in a *crèche*. There is a network all around, enclosing the whole thing, so that the children cannot get into any trouble. For the most part, the children are left there: the mothers go in and out, when they are not too busy. When they are occupied in the fields or with their domestic duties, they simply leave their children in this *crèche*. Another institution in all these villages that go to make up Baya is the maternity home, a similar establishment to this. These two things from a social development point of view are highly interesting, because they show the sense of the obligation of the community to look after its individuals. The care taken of their children by the Baya people no doubt in a large measure accounts for the enormous density of population in this part. I did not find these maternity homes and *crèches* in all the villages of the Baya tribe, but in every one of the villages making up the town of Baya as a whole, there existed a separate maternity home and a separate *crèche* for each village.

The whole town of Baya is kept very clean, and is approached by a road that took a good hour to traverse, which is kept as well as any avenue in any of the white stations that I saw.

In all this part of Africa they keep large numbers of pigeons and fowls in every village, and there are often large flocks of goats. The fowls, but more particularly the pigeons, are kept in extraordinary elevated abodes. You often see the fowls flying up from roof to roof in order to reach the fowl cot, which stands about ten or twelve feet from the ground. The pigeon houses, of which there are dozens, must be 25 or 30 feet high. I could not find out why they were raised to this extreme height, but it was a common custom of the people in this part to build their dove cots and fowl houses to a considerable height.

Perhaps you would like to know the history of my meeting

with Baya. I was laid up very ill in a village, when he came across me and conducted me to the white station. Then I went out and paid him a visit at his capital, about two days' march, and he came back and returned the visit to me in the white station. He came with an enormous number of his people. Whenever these tribes come in there are always quantities of disputes to be settled, varying from the minutest and most delicate domestic quarrels up to the most complex and elaborate points in intertribal law. Baya was dressed in a white suit and cap; he always wore white boots, and dressed in thoroughly European fashion. This visit shows very high intelligence and adaptability of the Banza, who were the absolute enemies of the white man only seven or eight years ago, and blocked his progress completely in a large part of Central Africa, when you find that nearly every tribe is now on the terms of the utmost friendship with the white man.

One travels across a country like Africa, either with a caravan or bearers, who carry everything you possess; or, if you travel by water, you travel in large canoes, of which you require a fleet. You can imagine the joy of sitting thirteen hours in the broiling sun in one of these canoes, with perhaps twenty or thirty natives shouting, dancing, jumping, halloaing as they paddle; there are at least two or three tom-toms in the canoe, and several brass jangles, and two or three ivory horns all keeping time with the paddlers. This goes on for thirteen hours, during which one is bound to keep almost in the one position, because they do not stop. The native likes to get to his journey's end as quickly as he can, and if you stop him he grumbles and says you are not treating him properly. The only way to keep the natives in good spirits is to allow them to make as much noise as they like, and let them go on paddling from half an hour before sunrise to half an hour after sunset without a break. I am perfectly certain that no white man, however strong, could possibly do the amount of work which these people get through in the course of a day with the willingness and the general air of enthusiasm that these fellows show.

I very much regretted when the time came for me to leave the Ubangi and all these charming people, because one gets a very real affection for them, especially in my case, because during a very severe illness I was entirely dependent on them. I was very dangerously ill, and whenever I came to myself I saw the black face of a petty village chief, who had taken me

out to hunt on the occasion on which I was bowled over by the heat. He very much regretted it, and looked upon it largely as his fault. He stuck to me right through to the end of my trip, and was a most passionately devoted creature. At first I could not speak a word of his language, and he could not speak a word of mine, but whenever I came to he was there. He was never in the way, and if I wanted anything he seemed to divine it. If I wanted to punish that man if he did not behave himself, I had only to put him in another canoe for a couple of hours, and he was then exactly like some dog that one has reproved, which seems to understand the reproof, and be pathetic for the rest of the day. I took poor old Njabili down with me to see the coast towns on my return. He was astonished when he saw even the primitive white towns that existed, such as Boma, which is nothing like a European town. His final remark to me when I said goodbye to him was that he was going back to be one of the greatest chiefs that had ever lived, because he had got enough money to buy five new wives.

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Proceedings of the Society.*

January 1st to March 31st, 1908.

The 775th Meeting of the Society was held on Saturday, January 4th, 1908, in the form of a Party for the Children of the Members.

The Victorians received their guests at 5-30 p.m., and Musical and other games occupied the first hour.

At 6-30 p.m. some Lantern views, prepared by Mr. Payton, and some comic views, were shown. Afterwards games were again indulged in; light refreshments being served in the Members' Room.

At 8-0 p.m. Mr. J. Howard Reed, F.R.G.S., took the chair, supported on the platform by his fellow-Victorians. Mr. C. A. Clarke, Hon. Sec., read the Report of the Hon. Examiner, Mr. J. D. Wilde, M.A. (see Annual Report for 1907), and Mrs. Eli Sowerbutts presented the prizes. The Society is indebted to Mr. J. P. Hughes and to Dr. W. J. Hoyten for kindly providing most of the prizes.

In place of the usual cake, a Christmas Tree had been provided and the lady helpers assisted by the Victorians distributed the toys hanging from the branches to the Children.

After a second Lantern Exhibition, and further games and dances, the Children sang "Auld Lang Syne" and thus ended a very enjoyable evening.

The 776th Meeting of the Society was held on Tuesday, January 7th, 1908, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meetings held on December 17th and 20th and January 4th were taken as read.

The death of Mr. Frank Spence, a Life Member of the Society, was announced. It was resolved that the regret and sympathy of the Members be conveyed to his relatives.

The election of Messrs Daniel Sharrocks, J.P. and J. H. Woodhouse, F.R.L.B.A., as Ordinary Members, was announced.

The Right Hon. Viscount Mountmorres gave an address on "The Unknown Heart of Central Africa," and illustrated his address with lantern slides from his own photographs. (See p. 12.)

Mr. R. Cobden Phillips moved, Mr. J. Howard Reed, F.R.G.S. seconded, and it was resolved unanimously, that the cordial thanks of the Meeting be tendered to the Lecturer for his very interesting address and for the splendid views shown.

The 777th Meeting of the Society was held on Tuesday, January 14th, 1908, at 7-30 p.m. In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on January 7th were approved.

* The Meetings are held in the Geographical Hall, unless otherwise stated.

The Election of the following Members was announced. Life : Dr. Albert Griffiths. Ordinary : Miss L. Warburton, Messrs. J. W. Baron, E. Leemann, T. Miller, and Walter Thorpe. Associate : Miss M. W. Wallace and Mr. John A. Stott.

The Chairman read a letter from Mrs. Frank Spence acknowledging the resolution of sympathy passed at the last Meeting.

Dr. Tempest Anderson, F.G.S., F.R.G.S., gave an address on "The Volcanoes of Central America," illustrated with views from photographs taken during his recent journey.

A very cordial vote of thanks to the Lecturer for his very interesting and instructive address was passed unanimously on the proposition of Mr. J. Stephenson Reid, seconded by Mr. Bernard Hobson, M.Sc., and supported by Mr. W. S. Ascoli.

The 778th Meeting of the Society was held on Tuesday, January 21st, 1908, at 7-30 p.m. In the chair, Mr. R. C. Phillips.

The Minutes of the Meeting held on January 14th were approved.

Dr. A. C. Magian, B.Ch., F.R.G.S., gave an account of "Life in Paris," illustrated with a large number of Lantern views. The Lecturer gave added interest to his remarks by drawing a plan of Paris on a blackboard as he proceeded.

Mr. Joel Wainwright, J.P., moved, Mr. George Ginger seconded, and it was passed unanimously, that the best thanks of the Meeting be given to Dr. Magian for the very interesting description of Paris he had given.

The 779th Meeting of the Society was held on Tuesday, January 28th, 1908, at 7-30 p.m. In the chair, Mr. C. E. Reade.

The Minutes of the Meeting held on January 21st were taken as read.

The Election of the following Ordinary Members was announced :—Messrs. R. Barton and F. R. Putz.

The Chairman mentioned the death of Mr. G. H. Gaddum, J.P., who was a member of the Provisional Committee of 1884, and had continued his support for the 23 years of the existence of the Society.

It was resolved unanimously that the regret of the Members at his death and their sympathy with his relatives in their loss be conveyed to them.

The Rev. T. T. Norgate, F.R.G.S., addressed the Members on "The Land of the Black Mountain; Montenegro as I saw it." The Lecturer explained that he was the bearer of letters from the British Government to the Montenegrin Government, and that he had experienced great kindness from the reigning Prince of Montenegro, Nicholas I. and his officials. Every facility was given for the successful carrying out of the objects of his journey, with the result that he was able to get together a unique set of photographs relating to this interesting but little visited principality, which is quite off the track of even modern travels. The route pursued was via Venice and Trieste, thence by sea down the eastern coast of the Adriatic, arriving at Cattaro, whence the attempt to explore the wild interior of Montenegro was made. Here the route approached the most western confines of the Turkish Empire in Europe. The Montenegrin capital Cetinje and the principal points of interest, both in town and country, were visited

and described. During his stay in Montenegro the lecturer paid a hurried visit to Albania, perhaps the most fanatical and restless part of Europe, and in the course of the lecture several views of Albanian life were shown. These were from photographs taken by the speaker at some personal danger in the famous bazaars.

Mr. Mark W. Thompstone moved, Mr. George Pearson seconded, and it was unanimously resolved that the best thanks of the Meeting be given to the Lecturer for his very interesting address.

The 750th Meeting of the Society was held on Tuesday, February 4th, 1908, at 7.30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting held on January 28th were approved.

The Chairman read a letter from Mr. W. Gaddum in acknowledgement of the resolution of sympathy passed by the Members on January 21st.

The Chairman mentioned the death of Mrs. Rylands, and it was resolved that the Members learn of the death of their fellow-member, Mrs. Rylands, with great regret, and sympathise with her relatives in their bereavement.

Mrs. Louise Hirsch gave a Lecture on "Australian Water Supply and Resources, or the Tragedy and Comedy of Australian Droughts."

Australia, she described, as the only one of our great colonies acquired without the loss of a single life in warfare. The freedom from tropical diseases, volcanic eruptions, and earthquakes might be taken as a set-off against the droughts to which the climate was subject, and the losses thereby occasioned. These droughts were caused not so much by lack of water as by its unequal distribution. As a former resident in Australia, Mrs. Hirsch had much to say regarding the tragedies occasioned by droughts as well as by devastating floods. The comical side of life in the bush resulting sometimes from abortive attempts to secure supplies of water for domestic purposes she was able to describe from her own actual experience in a way that greatly amused the audience. The peculiar fauna and flora of the country, as well as its aborigines, came in for intelligent description, and on the agricultural and pastoral side her remarks were interesting and edifying, especially in reference to the artificial water supply which, applied to the irrigation of vast tracts formerly barren, has made the desert blossom as the rose. A collection of photos shown on the screen, added considerably to the pleasing effect of the lecture.

The Chairman moved that the hearty thanks of those present be given to Mrs. Hirsch for her very interesting address, and the resolution was passed unanimously.

The 781st Meeting of the Society was held on Tuesday, February 11th, 1908, at 7.30 p.m. In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on February 4th, were taken as read.

The election of the following new Members was announced:—

Ordinary: Mr. Herbert Waters Hardy.

Associate: Miss E. M. Harris and Mrs. S. J. Taylor.

Mr. C. H. Bellamy, F.R.G.S., gave an address entitled "Snapshots in Palestine and Egypt."

After speaking of Jerusalem as the one Holy City to which all the world

turns, and referring to the principal events in its history, the lecturer described his landing at Jaffa, his experiences in the town, and the railway journey to Jerusalem, through "the hill-country of Judea." Views were then given of the city from various points, of the Mosque of Omar, or as it should more correctly be called, "the Dome of the Rock," because in reality it is not a mosque, but a memorial shrine; also of the various gates of the city, the citadel and the walls, the touching scenes in the Jews' Wailing place, the Mount of Olives, Gethsemane, the Via Dolorosa, and Calvary, with the Church of the Holy Sepulchre.

On the road to Bethlehem is the traditional Rachel's Tomb, evidently a building of no great antiquity, the so-called "David's Well," the fields where the shepherds are said to have watched, and the fields of Boaz. Bethlehem and the church of the Nativity were described. Then Bethany with the traditional house of Martha and Mary, and the Tomb of Lazarus. A drive to Jericho, passing the Good Samaritan Inn, proved to be very interesting, and the Jordan and Dead Sea were visited. The greatest depth of the Dead Sea is 1,310 feet, and as it is 1,292 feet below the level of the Mediterranean, its bottom in the deepest part is 2,603 feet below the level of the Mediterranean. Its level is 3,786 feet below Jerusalem.

Egypt was entered by the port of Alexandria, and by a railway ride of 3½ hours, passing fields of rice and maize and sugar cane, Cairo was reached. Amongst other views, one was given of the street called the Mouski, full of Bazaars, and streets branching out on all sides full of Bazaars. Of the 264 mosques in the city views of those of Sultan Hassan, and of Mahmudujeh sufficed. The Tombs of the Khalifs were visited in detail, as well as the Pyramids and the Sphinx, with the Temple of the latter. The great pyramid of Ghizeh is about 750 feet square. The pyramids convey to the beholder a sense of grandeur and majesty, and produce within him feelings of astonishment and awe, such as is scarcely caused by any other of the erections of man.

Considerable time was spent on the Nile, the all in all to the Egyptians. It waters and manures his fields, supplies his harvest, and then carries off their produce to the sea for exportation. Ancient Memphis is marked by some large mounds of rubbish, the colossal statues of Rameses II once marked the entrance to the temple, but are now cast down, and then a mile further on the wonderful step pyramids composing the Necropolis of Sakkara.

Thebes was then visited, under the modern names of Luxor and Karnak. Here is a perfect feast of temples, palaces and piles stupendous. The temple of Luxor was built 1400 B.C., on the site of an older sanctuary, by Amenophis III. of the 18th Dynasty. An imposing avenue, bordered by sphinxes, leads up to the great glory of Karnak, the Temple of Ammon, or "Throne of the World," as it was officially styled. Various views were given, as also of the Ramaseum and the Colossi of Memnon.

Sir T. Thornhill Shann, J.P., moved, Mr. C. A. Clarke seconded, and it was unanimously resolved, that the best thanks of the Meeting be given to Mr. Bellamy for the very interesting account which he had given of his journey.

The 782nd Meeting of the Society was held on Tuesday, February 18th, 1908, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting held on February 11th were taken as read.

Mr. W. H. Shrubsole, F.G.S., gave an address on "Hungary and the Hungarians," illustrated with artistically-coloured and other lantern slides. Mr. Shrubsole corrected erroneous beliefs current in this country, and showed that Hungary and Austria are free and independent states, which, by treaty, have agreed to have a common Army and Navy for mutual defence. The marvellous progress made by Hungary during the last 40 years in all departments of the National life was described at considerable length. The following extract from the Lecture will be of special interest :—

In those parts of Hungary which are least favoured in respect of soil and climate, there has been a great lack of fruit trees; and in other parts there were not enough mulberry trees to supply food for the silk-worms reared by 100,000 families. To supply the deficiency, at least to some extent, the State in 1897 began to plant fruit trees on both sides of the State roads, until now more than 800,000 trees have been planted along 6,000 miles of road. Of these, 98,000 were mulberry trees.

It is proposed to continue this work until the whole of the State roads have been planted, with the exception of portions, such as mountain passes, which are unsuitable.

In addition to this, it has been determined that all suitable county and parish roads also shall be planted, and to this end an Act of Parliament orders that a public orchard shall be established in every parish. To lessen the difficulty of stocking these parish orchards, the State has provided twenty-five large nurseries, from which the wants of the different districts can be supplied at a low rate.

From these, for the purpose indicated, young trees are distributed every year to the communities, and to clergymen and schoolmasters, either quite free, or at a small cost. In the ten years from 1892 to 1902, more than 69 millions of fruit trees were thus distributed. Grafting stems are supplied at one-tenth of a penny each.

The parish orchards, in which the trees are reared for the purpose of stocking the parish roads, are managed by local schoolmasters and ministers who have qualified by attending classes for the study of fruit culture; and prizes of from £8 to £25 are given yearly to those who have been most successful in grafting stems, and in the general management of the orchards.

The main idea in connection with the road planting is that the produce of the trees shall pay for the repair of the roads, and as the trees attain maturity this novel idea is realised.

In order that better kinds of fruit trees may be multiplied, the Hungarian Government, in 1900, bought in France 600,000 one-year-old plum seedlings, and distributed them among the State orchards, from whence, when older, they will be still further distributed, and many will be given to small farmers.

In one year, owing to severe distress in some mountain districts, no less than 15,128 farmers received 91,762 young fruit trees, quite free.

As it was found that late frosts in some elevated districts formed a serious obstacle to fruit-growing, in 1903, Dr. Daranyi, the energetic Minister for Agriculture, sent a Commission to Denmark, Sweden and Norway, to gather information respecting fruit trees which, either by being of hardier constitution or by blooming later, could bear, in spite of frost, a satisfactory quantity of

fruit; and as a result, experiments are now being conducted, with some promise of success, on the higher slopes of the Carpathians, where hitherto fruit culture has been impossible.

That the cost of sending the trees throughout the country may be lessened, one-half the usual rates are charged on the State railways.

Owing to this energetic action of the State, private nurserymen and fruit-growers have been obliged to lower their selling prices, which is, of course, a substantial advantage to the public.

The foregoing is but a meagre outline of one of the many activities of the Hungarian Government in its continual endeavour to improve the condition of peasant farmers (without distinction of race) and to promote the general welfare.

A fuller idea of the extent and value of the assistance given in Hungary to all branches of agriculture, and to the poorest peasants, may be obtained from a very interesting book by Dr. Daranyi on "The State and Agriculture in Hungary." It is a most instructive work, which should be read by all social reformers and educationalists.

Mr. J. Howard Reed, F.R.G.S., moved, Mr. Samuel Massey seconded, and it was unanimously resolved that the best thanks of the Meeting be given to the Lecturer for his very interesting address.

The 783rd Meeting of the Society was held on Tuesday, February 25th, 1908, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting held on February 18th were taken as read.

The election of Messrs. Herbert Lynham and James H. Hudson as Ordinary Members was announced.

Mr. J. Howard Hall gave an account of his "Journey in India," illustrating his address with some fine lantern views.

Mr. Walter Speakman moved, Mr. J. Howard Reed, F.R.G.S., seconded a resolution that a hearty vote of thanks be given to Mr. Hall for his very interesting address, and the resolution was passed unanimously.

The 784th Meeting of the Society was held on Tuesday, March 3rd, 1908, at 7-30 p.m. In the chair, Mr. George Pearson.

The Minutes of the Meeting held on February 25th were approved.

Mr. W. Beecher Smith gave a Lecture entitled "Canada's Capabilities, or 10,000 miles on behalf of 10,000 men." The address was illustrated with Lantern Slides.

The Chairman moved that the best thanks of the Meeting be tendered to the Lecturer for his interesting Lecture, and the resolution was carried unanimously.

The 785th Meeting of the Society was held on Tuesday, March 10th, 1908, at 7-30 p.m. In the chair, Mr. David A. Little.

The Minutes of the Meeting held on March 3rd were taken as read.

The Chairman mentioned the death of one of the Members, Alderman Sir James Hoy, J.P., and after speaking in appreciation of Sir James Hoy's services to the City, he moved that the sympathy of those present with Lady Hoy and family be conveyed to them. The resolution was passed unanimously.

The election of the following three Ordinary Members was announced:—

Messrs. John Heath, Wm. Thompson and W. H. Ward.

Mr. Bernard Hobson, M.Sc., F.G.S., gave an account of his visit to Mexico, under the title of "Mexico and its Volcanoes," illustrating his address with Lantern Views from Mr. Cadell's and his own photographs.

Dr. L. Sterne moved, Mr. George Ginger seconded, and it was unanimously resolved, that hearty thanks be given to the Lecturer for his very interesting address.

The 786th Meeting of the Society was held on Tuesday, March 17th, 1908, at 7.30 p.m. In the chair, Mr. David A. Little.

The Minutes of the Meeting held on March 10th were taken as read.

The Chairman mentioned the loss by death of Mr. Wm. Wilson, J.P., who had been a Member for nine years, and it was resolved that the sympathy of those present with the relatives in their bereavement be conveyed to them.

Mr. T. Arthur Leonard addressed the Members on "St. Luc and the Val d'Anniviers," his remarks being illustrated with very fine Lantern Views.

Mr. Leonard said that to reach the Val d'Anniviers one must needs journey across the greater part of Switzerland—past Nenchatel, with its vineyards; past Lausanne, with the vision of the deep blue of its lake, and the grand ramparts of the Dents du Midi across; past the Castle of Chillon; past Villeneuve, Martigny; round that sharp elbow of the Rhone Valley to where it opens up into wide levels of moraine mud now bearing rich harvests of vines, olives and maize; past old Sion, the capital of the Valais, with its mediæval castle towering over it, and so on until hot, tired, and maybe half-choked with dust you alight at Sierre, and the big Simplon express rumbles on its way through the wide plains of the valley to distant Italy. Here begins your journey away from the beaten tracks of tourist Switzerland. The road up from Sierre through the valley is a marvel of audacity. It goes through gorges and along precipices at the foot of which the Navigonze is heard roaring its way down to the Rhone. Through tunnels it passes, and skirts wild spots where a breaking axle or a frightened horse would probably give you a drop and a sudden stop 2,000 feet below.

What makes the charm of these inner recesses of the Valais is the surprises that await you there, the sight of a thousand things you think you are the first to discover because you had no suspicion they were there. Each of these tributary valleys is a little world to itself; no two are alike either in costume, language or manners. In this one they speak German, in another a mixture of Romansh patois and Italian; in yet another French, with expressions belonging to the seventeenth century—a French imported from old Provence, where all the mountaineers served. There is hardly a family in which there is not piously preserved in a trunk or an old cupboard a French, Italian, or Spanish helmet or uniform, with broad, flaming red facings, and that could tell the tale of some historic battle. On great festivals, such as Corpus Christi Day, these uniforms are worn, and the wearer marches through the village proud in the possession of such fine raiment.

The Anniviards, it is asserted, are descended from the Huns, and this is how it is accounted for. The valley in ancient times was nothing but a wilderness of forest. After the death of Attila, when his terrible hordes were

beaten on every hand and fleeing in all directions, some broken remnants of them took refuge with their flocks in this gorge; and finding themselves in safety there, they settled and cleared the land. For long they remained isolated; their neighbours feared and despised them, because they repulsed all the missionaries who were sent to them. Even now a great many of their names are Hungarian. One of the most considerable families in the valley is called Ruaz, like Attila's brother; there is also a mountain that bears this name; and there are found among them certain customs identical with the practices of those other descendants of the Huns, the Magyars. At Grimentz, just as in all the villages on the banks of the Theiss, everybody is invited by the ringing of a bell to come and partake of the funeral feast, and the crosses in the cemeteries are like those of the Hungarian cemeteries. The nomadic habits of this people seem also to point to an Asiatic descent. Whole villages migrate sometimes to the plain, sometimes to the mountain. In the vintage season the whole valley goes down to Sierre, where the finest vineyards belong to the Anniviards. The parish priest himself migrates at the head of his flock, with the schoolmaster, the president, and all the authorities. The families follow one after the other like a caravan in the desert. First comes the mule, heavily laden, led by the "chef," with the little children snugly packed in the panniers, like birds in their nests; then the wife, taking charge of the goats, the sheep, and the calves; and behind her the pigs trot grunting along driven by a thin little girl with tangled hair, or a toothless old woman armed with a thick stick.

The people have a gracious custom of caring for orphans and other children who have been thrown upon the charity of a cold world. Counting it a religious duty, the peasant folk adopt such children, and on their majority give them a little bit of land sufficient to feed two cows, and a horse which is theirs for life. One such child is found in most families, for their own children are not numerous.

The people generally marry late, after the death of father or mother; and in order to keep up the family tradition and not to diminish the patrimony too much, only one in a family marries. Counsel is taken by brothers and sisters as to which one is to devote himself. Betrothals are made by exchanging a flower, a piece of money, a book, or other small article. The bride brings neither dowry or trousseau. Rich parents give the young couple a house or a few bits of land, usually the furthest away and the most difficult to cultivate.

Five thousand four hundred feet above sea level stands the village of St. Luc, where one can revel in the glory of that grand panorama extending from the Oberland Mountains across the Rhone Valley to the big peaks at the head of the Val d'Anniviers, their great white forms towering up against the blue of heaven—the Rothorn, Matterhorn, the Gabelhorn, and, from a height above the village, the shoulder of the Dent Blanche. There is an interesting ascent of the Bella Tola from St. Luc, and by a track over the Meiden Pass to the valley below, passing among ancient moraines, alpine gardens of edelweiss, and in early summer these spots are stained with gentians, deep blue and red. On the lower slopes the floral wealth is far greater still. There are found the plants of the Pyrenees, of the Andes, and of the Himalayas—great rose-coloured beds of rhododendrons, azaleas of vivid crimson, and golden arnicas with their stately bearing, making one think of rays of

sunshine turned into flowers. Our familiar English flowers are there, too, but all larger in growth, and with more vivid colouring, due doubtless to the struggle for fertilization.

The Zinal valley, a noted centre for climbers, the Durand Glacier, the Val de Moriez, Guinientz, and Evolena in the Dents de Veisivi were all illustrated as being well worth a visit, and Mr. Leonard concluded by saying that even with the aid of camera and lantern it was a vain thing to attempt more than to give a faint idea of the glory of this, one of the choicest valleys of that matchless country, and urged his listeners to go and explore the district for themselves.

Mr. R. Cobden Phillips moved, Mr. Charles A. Clarke seconded, and it was unanimously resolved that a hearty vote of thanks be given to Mr. Leonard for his very interesting address.

The 787th Meeting of the Society was held on Tuesday, March 24th, 1908, at 7-30 p.m. In the chair, Mr. J. Stephenson Reid.

The Minutes of the Meeting held on March 17th were approved.

The death of His Grace the Duke of Devonshire, a Vice-President of the Society, was referred to with regret, and a resolution of sympathy with Her Grace the Duchess was passed.

Mr. Mark W. Thompstone addressed the Meeting on "A Ramble in Holland, and the Way there via the Manchester Ship Canal," illustrating his remarks with original Lantern Slides. (

Mr. R. Cobden Phillips moved, Mr. R. Ernest Hope seconded, and it was resolved that a hearty vote of thanks be accorded to Mr. Thompstone for his interesting address.

The 788th Meeting of the Society was held on Tuesday, March 31st, 1908, at 7-30 p.m. In the chair, Mr. Charles A. Clarke.

The Minutes of the Meeting held on March 24th, were taken as read.

The following letter was read :—

Chatsworth, 28.3.08.

DEAR SIR,—

The Duchess of Devonshire desires me to express her sincere thanks for the kind message of sympathy sent by the Manchester Geographical Society.

I am,

Yours faithfully,

(Signed) C. G. HAMILTON.

Mr. J. Howard Reed, F.R.G.S., gave an address on "British South Africa," illustrated with Lantern Slides.

Mr. George Pearson moved, Mr. George Ginger seconded, and it was unanimously resolved that a hearty vote of thanks be given to Mr. Reed for his very interesting address.

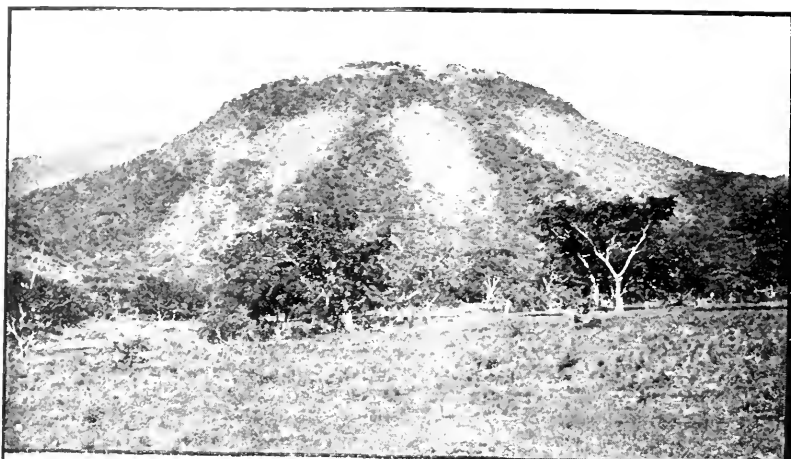


Fig. 1. Jorullo from the west.

Fig. 2. Crater of Nevado de Toluca.

Fig. 3. Laguna Grande in crater of Nevado de Toluca.

The Journal

OF THE

Manchester Geographical Society.



WITH THE
INTERNATIONAL GEOLOGICAL CONGRESS
IN MEXICO.

By BERNARD HOBSON, M.Sc., F.G.S.

(Addressed to the Society in the Geographical Hall, on
Tuesday, March 10th, 1908.)

THE International Geological Congress meets every three years. My friend Mr. H. M. Cadell (formerly of the Geological Survey of Scotland) and I decided to attend its tenth triennial meeting, which was held in the city of Mexico, in September 1906.

We left Dover on the Hamburg-American liner Prinz Joachim on July 16th. After calling at Havre in France, and Santander and Corunna in Spain, we arrived at Havana in Cuba, on August 3rd. In the spacious natural harbour of Havana the wreck of the United States warship Maine, blown up on February 15th, 1898, may still be seen. We landed and visited the Botanical Gardens, in which there is a splendid avenue of Royal palms, *Oreodora regia*. This tree, considered by Alexander von Humboldt one of the handsomest palms known, is a native of Cuba, Panama and Southern Florida. It sometimes reaches 110 ft. in height.

On August 6th, at 10 a.m., we arrived at Vera Cruz (29,000 inhabitants), founded by Cortes in 1520, the chief commercial port of the Republic of Mexico, after a voyage of 6,472 Statute (land) miles.

Before describing the rest of our journey I may say a few words as to the country we were about to visit. The Republic of Mexico has an area of 767,000 square miles or $6\frac{3}{10}$ times that of the British Isles, but its population (in 1900) was only 13,600,000. A great part of Mexico is occupied by the Mesa Central or Central Plateau, which has an area of about 257,000 square miles and an average elevation of about 1,700 metres (5,576 ft.). The consequence of the great elevation of this

plateau, is that it enjoys a climate far more temperate than the situation of a great part of it within the tropics would lead one to expect.

Vera Cruz is a very hot and unhealthy place,¹ so we made haste to leave by train of the Mexican Railway Co., at two in the afternoon, for the town of Orizaba,² distant 81 miles, and at an altitude of 4,028 feet. About 47 miles from Vera Cruz the railway line enters mountainous country and the scenery is beautiful. The city of Orizaba has nearly 33,000 inhabitants and is beautifully situated among hills. About 18 miles N.W. of the town is the extinct volcano called the Peak of Orizaba. A good view of it can be obtained from near the city, and it forms a splendid landmark for vessels approaching Vera Cruz. On August 7th we left Orizaba at 10 a.m. for Mexico. The railway journey is one of the most beautiful in the world. Between Maltrata (5,551 ft.) and Boca del Monte (7,922 ft.) the line, in climbing the mountains, traces the outline of a top-boot, and an hour after passing Maltrata station, one looks down upon it from a height of 2,000 ft. above it. We arrived at the city of Mexico at 7-15 p.m. It is 182 miles from Orizaba and 263 from Vera Cruz. It is situated on the Mexican plateau, 7,432 ft. above sea-level and has 368,000 inhabitants. It has many broad streets, fine squares and handsome buildings. The Cathedral is the largest and most sumptuous church of America. Its architecture is Renaissance. It is 425 ft. in length, 200 ft. wide and 180 ft. high. The corner stone was laid in 1573 and the building was finally dedicated in 1667, but the two towers, 218 ft. high, were not completed until 1791. Among other objects which excited our interest were two meteorites at the National School of Engineers. Both were siderites or meteoric iron. The smaller weighed 3 tons, 5 cwt., 52 lb., and was found at Hacienda de la Concepción, District of Allende, state of Chihuahua (Northern Mexico). The larger weighed 13 tons, 17 cwt., 97 lb., and was 26 ft. 9 in. in circumference in a horizontal plane. It was found at Chupaderos, District of Jiménez, state of Chihuahua.

1. Its death rate in 1897 was 54 per thousand.

2. An excellent general map of Mexico on which our routes in the country can be followed is the "Carte du Mexique" Dressée au dépôt de la Guerre par Mr. Niox, scale $\frac{1}{1,000,000}$ = 47.34 miles to 1 inch, date 1873, price 1 franc plus postage, from H. Barrère, 21 Rue du Bac, Paris. Of railways it shows only one, but the railways up to date are shown on Rand, McNally & Co.'s Indexed Atlas of the World, Map of Mexico, scale 72 miles to 1 inch.

Mitla.

On August 12th, Mr. Cadell, Dr. Hlawatsch and I left Mexico by rail for Oaxaca, 344 miles S.E. of Mexico. We arrived there at 6-30 p.m. on August 13th. Next morning we started in a carriage, drawn by 3 horses and 3 mules, to drive to Mitla, 26 miles away. The road, like most Mexican roads, was very bad, full of holes and ruts and pools of mud and water and our team had a most annoying habit of standing in the middle of fords, of which there were nine, and refusing to budge. After visiting the big tree of Santa Maria del Tule—a cypress (or more correctly a *Taxodium*) with a trunk 154 ft. in circumference at 6 ft. from the ground—we drove to Tlacolula, 18 miles from Oaxaca, where we lunched. In the streets of Tlacolula we saw oxen carrying a plough past a cactus hedge. The hedge consisted of *Cereus*, which grows with vertical columnar stems provided with spiny ridges and is called by the Mexicans “organos” from its resemblance to organ pipes. We arrived at Mitla at five in the afternoon, 9½ hours after leaving Oaxaca.

The ruins of Mitla¹ are perhaps the most celebrated in Mexico. They were built by the ancient inhabitants long before the conquest of the country by the Spaniards in 1521. They are of two types, the first and more primitive type consisting of pyramids, either of adobe (sun-dried brick) or else of stones and soil, 30 to 35 ft. high and known as “Teocalli” or pyramidal mounds of worship. The second type, which is far more interesting, consists of 3 separate groups of palaces or temples, each consisting of buildings surrounding three sides of a quadrangle. These palaces are built of rhyolite, a volcanic rock, upon which they also stand. The best preserved palace had a triple portal spanned by huge stone lintels. Mr. W. Corner (*loc. cit.*) measured a lintel 19 ft. 6 in. by 4 ft. 11 in. by 3 ft. 9½ in., and calculated its weight at 23 tons 16 cwt. In the same palace there is a courtyard called the Patio of Mosaics. Its walls are about 12½ feet in height. The panels of the walls are decorated with very beautiful grecques or so-called mosaics. The patterns are not produced by tint or colour on a flat surface

1. See C. G. Johnson, “The Ruins of Mitla, Mexico,” in *Journal of the Royal Institute of British Architects*, vol. xi (Third Series), No. 19, Sept. 24th, 1904, p. 513—526, also W. Corner, “Mitla: an Archaeological Study of the Ancient Ruins and Remains in that Pueblo,” *Journ. Anthropological Institute of Great Britain and Ireland*, vol. xxix (1899), p. 41.

but by embedding in the wall flat pieces of cut stone, the projecting ends of some of them forming the pattern. In one of the patios (courtyards) of a ruined palace at Mitla, there are hieroglyphic paintings, in white and brownish red, on narrow bands of plaster, beneath the lintels. These represent gods and goddesses and other mythological characters.¹

On August 15th we returned to Oaxaca, and on the 16th left by train for Ocotlan, 23 miles away. Thence we rode to Taviche and visited some silver mines. It was curious to see, beside the modern machinery of the San Juan mine, Taviche, a primitive bullock-waggon, its wheels without spokes. On the 17th we returned to Oaxaca, which we left at 6-15 a.m. on the 18th for Mexico, where we arrived at 6-30 a.m. on the 19th. Next day we joined an excursion, known as the Jorullo Excursion, organised in connection with the Geological Congress, of which the following is an account:—

*Nevado de Toluca.*²

Under the leadership of Mr. T. Flores, geologist of the Mexican Geological Institute, a party of thirty geologists left Mexico city (altitude 7,432 ft.) on August 20th for Toluca (altitude 8,761 ft.), distant 46 miles by the Mexican National Railway. From a small hill close to Toluca an excellent view of the town itself and the extinct volcano of Xinantecatl or Nevado de Toluca (altitude, according to Flores, 14,973 ft.), distant about 12½ miles to the south-west, is obtained. (Fig. 4.) It lies at the southern edge of the great Mexican plateau (Mesa Central), and has the form of an abruptly truncated cone, resembling that of Vesuvius before the eruption which destroyed Pompeii and Herculaneum. On August 21st we left Toluca by train for Calimaya, 11 miles distant and on the east side of the volcano. At Calimaya station we were met by a body of *rurales* or rural mounted police, armed with carbines, swords, and revolvers, who were to form our escort. They

1. They have been copied by Dr. Edward Seler and published in a folio "Wandmalereien von Mitla." 1895. Some are reproduced in Dr. Seler's *Les Ruines de Mitla*, forming section VI of the *Guide des Excursions du Xe Congrès Géologique International*, Mexico, 1906.

2. For many of the facts in this paper I am indebted to two papers, "Le Xinantecatl ou Volcan Nevado de Toluca," par T. Flores, and "Le Jorullo," par E. Ordóñez, both forming part of the "*Guide des Excursions du Xe Congrès Géologique International*, Mexico, 1906."

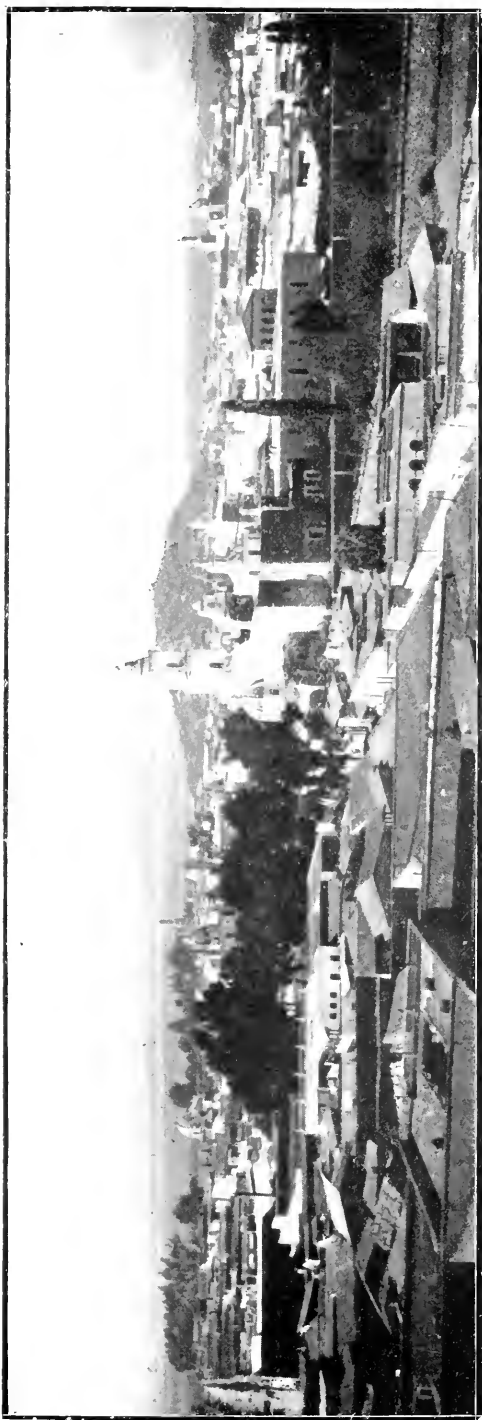


Fig. 4. Nevado de Toluca from city of Toluca (photo B.H.).



Fig. 5. Panorama of Lake of Patzeuaro from Los Balcones.
(Sketch by H. M. Cadell.)



were holding horses for our use. We mounted, and rode at first by a gently ascending road through fields of maize and agaves (American aloes). The road then followed the bank of a barranca or stream-gully, which was dry. We dismounted to examine the excellent section exposed. The walls of the barranca were composed of well-bedded white pumiceous tuff, the lapilli varying in size from that of peas to that of a fist or larger. In one place the tuff was seen to overlie a bluish-grey bed of volcanic sand, in another the underlying bed consisted of soft black peat-like soil, but the most interesting point was the exposure in the vertical barranca-wall of a transverse section across a small stream-bed filled with pumiceous tuff differing slightly in colour and bedding-planes from the main mass, showing that water had played a part in the deposit of the almost horizontally bedded tuffs. Higher up we entered a pine forest, and climbed a shoulder whence a splendid view of the summit of the mountain and the surrounding country was obtained. After descending, with many windings, through most beautiful woods almost as much as we had ascended, we reached the Hacienda del Veladero, where we lunched. We then resumed our ascent, following the edge, crossing and then following the bottom of a deep barranca in volcanic tuff, until we reached our quarters for the night, two specially erected wooden sheds. Rising at 5 the next morning, after a somewhat sleepless night owing to the cold, we ascended through a pine forest amid wild lupines. The sun was rising, and through the beautiful foreground of pines we saw a magnificent view; the broad and flat plain to the east was filled with a sea of cloud, above which towered in the distance the snow-clad cone of Popocatepetl (17,876 ft.) and the broader white summit of Ixtaccihuatl (17,318 ft.). Abruptly the forest came to an end at 4,100 metres (13,448 ft.), and we rode by a winding path on the treeless but grassy mountain side until we reached a cairn at one of the lowest points on the crater rim, whence we obtained a fine view of the interior of the crater with its central lava dome. (Fig. 2.) We rode down the interior slope of the crater to the shore of the Laguna Chica, the smaller of two lakes of crystal water, which is separated by the central lava dome from the Laguna Grande (Fig. 3) which is about 300 metres long by 213 broad and 10 metres in maximum depth, according to D. Joaquín Velázquez de León. The lakes lie at 4,270 metres (14,005 ft.) above sea-level, hence the highest point of the crater rim, "Pico

del Fraile," to which some of us climbed, rises 968 ft. above their surface. The inner slopes of the crater have an average inclination of 30° , and are covered by scree to within a short distance of the rim: scattered patches of grass and wild flowers occur to a considerable height, above which are bare rock and scanty patches of snow. According to Dollfuss and Montserrat the elliptical crater measures along its major axis from north-west to south-east 1,431 metres (1,565 yards) by 595 metres (650 yards) along its minor axis. Mr. T. Flores regards the cone as built up of a series of lava-flows covered by pumiceous tuff and breccias. Some of the lava masses form prominent crags around the crater rim, but the tuffs form the main feature of the outer slopes of the cone, at any rate on the north and north-east sides. The final manifestation of volcanic energy was marked by the formation of the central lava dome. According to Mr. E. Ordóñez all the lavas are hornblende hypersthene andesites. The evidence as to the age of the volcano cited by Mr. Flores does not appear to me quite convincing. He says that Mr. J. G. Aguilera¹ refers to the Upper Pliocene the pumiceous tuffs and breccias of the Las Cruces, Monte Alto, and Sierra Nevada range (separating the basin of Mexico city from the valley of Puebla), and Mr. Flores states that these tuffs correspond to those around the Nevado de Toluca, but apparently Mr. Aguilera does not give his reasons for assigning the tuffs he mentions to the Upper Pliocene. As Cretaceous limestones underlie the volcano and Pleistocene deposits overlie the argillaceous tuffs, which in turn overlie the pumiceous tuffs of the volcano, it may be considered to be of Tertiary age, and both Mr. Flores and Mr. E. Ordóñez believe it to have first appeared at the beginning of the Pliocene. No eruption is recorded as having occurred in historic times, and the mountain appears to have suffered considerable erosion. We rode down to Calimaya by a more direct path, and returned by train to Toluca the same evening.

Toluca to Jorullo.

August 23rd. We left Toluca by train for Morelia (altitude 6,396 ft.), 188 miles distant, passing on the way the saline lake of Cuitzeo, 45 miles long by 10 wide, but, like the rest of

1. "Bosquejo Geológico de Mexico"; Boletines del Instituto Geológico de Mexico, Nos. 4, 5, and 6 (1896), p. 229.

the Mexican lakes, very shallow, hardly more than 20 to 26 feet deep.

August 24th was spent in Morelia, and on the 25th Mr. Ezequiel Odóñez, sub-director of the Mexican Geological Institute and Secretary of the International Congress, who was to be our guide to Jorullo, joined us. In the afternoon we left by train for Patzcuaro (alt. 7,183 ft.), 39 miles away. Close to Patzcuaro is the beautiful lake of the same name (alt. 6,690 ft.), about $12\frac{1}{2}$ miles long and 23 feet in average depth. We walked from the town to the terrace of Los Balcones on the volcanic hill of El Calvario. From this point there is a splendid panorama of the lake intersected by promontories, studded with islands and surrounded by basaltic cones so numerous, so graceful, and so perfectly preserved as to rejoice the heart of the geologist. (Fig. 5.)

August 26th. At 6 a.m. we started, accompanied by an escort of *rurales*, to ride to Ario, about 23 miles away. After passing through maize fields we rode through the most beautiful park-like scenery, the hills on either side being all volcanoes, often beautifully preserved cones and either wooded or grass-grown from foot to summit. Volcanoes are as plentiful in Mexico as blackberries in England. At 7-45 a.m. we arrived at Santa Clara de Portugal (alt. 7,808 ft.), where maidenhair ferns grow like weeds on the old walls. On leaving it we passed through country which one might have mistaken for a bit of the English Lake District, but no lakes were visible, and on a near view the vegetation differed. We arrived at Ario (alt. 6,463 ft.) at 2-30.

August 27th. We left Ario at 6 a.m. Our road was chiefly downhill; we were descending the southern escarpment of the Mexican plateau. The vegetation became more tropical; bananas, mimosas, and Opuntias were common, and small well-wooded volcanic cones were numerous. At 9-35 we reached Rancho Nuevo (alt. 4,593 ft.), 11 miles from Ario. We left at 12-40 and continued to descend, passing through a pine forest. In an hour we were among fan-palms, and as we reached lower levels they increased in number. Here and there a Ficus had entwined its stem with that of a palm, and orchids grew among the branches. We passed the Hacienda La Playa, and descended to the bottom of the natural amphitheatre in which

Jorullo lies.¹ Giant trees dropped their adventitious roots to the ground, climbing plants entwined their trunks, exquisite natural ferneries were on every hand, but what most delighted us was the abundance of streams and the greenness of the luxuriant tropical vegetation. At 5-15 p.m., after 10 miles ride from Rancho Nuevo, we reached the comfortable house at Mata de Platano, south-east of Jorullo, which the copper-mining Compañía de Inguaran had placed at our disposition.

At last we had arrived at the goal of our journey, the historic volcano, which first appeared in September, 1759,² and was visited in 1803 by Alexander von Humboldt, whose description³ has made it classic ground for the geologist.

Jorullo.

As already mentioned, Jorullo lies at the bottom of a great natural amphitheatre, $8\frac{3}{4}$ miles in diameter, formed by erosion in the Central Plateau, and with its concavity facing south. Within this amphitheatre the volcano stands upon a raised platform or minor plateau of old basaltic lavas, named the Mesa de la Higuera, the surface of which is inclined towards the south and west. On every side stand older basaltic cones, such as the Cerro Blanco, $1\frac{1}{4}$ miles to the south, Cerro del Bonete, 1 mile to the east, Cerro del Saucito, $1\frac{1}{2}$ miles north-east, Cerro de la Cruz, $2\frac{1}{2}$ miles north-west, Cerro del Veladero, $2\frac{1}{2}$ miles west. Looking northward from the Pico de Humboldt, the north-eastern summit of Jorullo crater rim, one sees the escarpment of the great plateau rising over 3,000 ft. above the floor of the amphitheatre and densely wooded; the western side of the amphitheatre is formed by the dioritic chain of Las

1. Humboldt mentions guavas (*Psidium pyrifera*), a fan-palm (*Corypha pumosa*) now called *Copernicia pumosa*, and an alder (*Alnus Jorullensis*) at the Playas de Jorullo.

2. "Kosmos": J. G. Cotta'sche Verlag, Stuttgart, vol. iv (1858), pp. 334—348, and English translations by Otté & Dallas, Bohn's Library, 1865, vol. v, pp. 308—323.

3. Dr. J. Felix and Dr. H. Lenk in "Beiträge zur Geologie und Paläontologie der Republik Mexico," Leipzig, 1889—1899, part i, p. 27. say (trans.): "The volcano arose with its neighbouring cones in a fearful eruption in the night from 28th to 29th September 1759, and had during the next 4 years, that is until the year 1763, further very violent outbreaks, which then continued with more or less violence a further 11 years, that is until 1774. Only from that time forward did the mountain become quiescent and enter the fumarole stage."

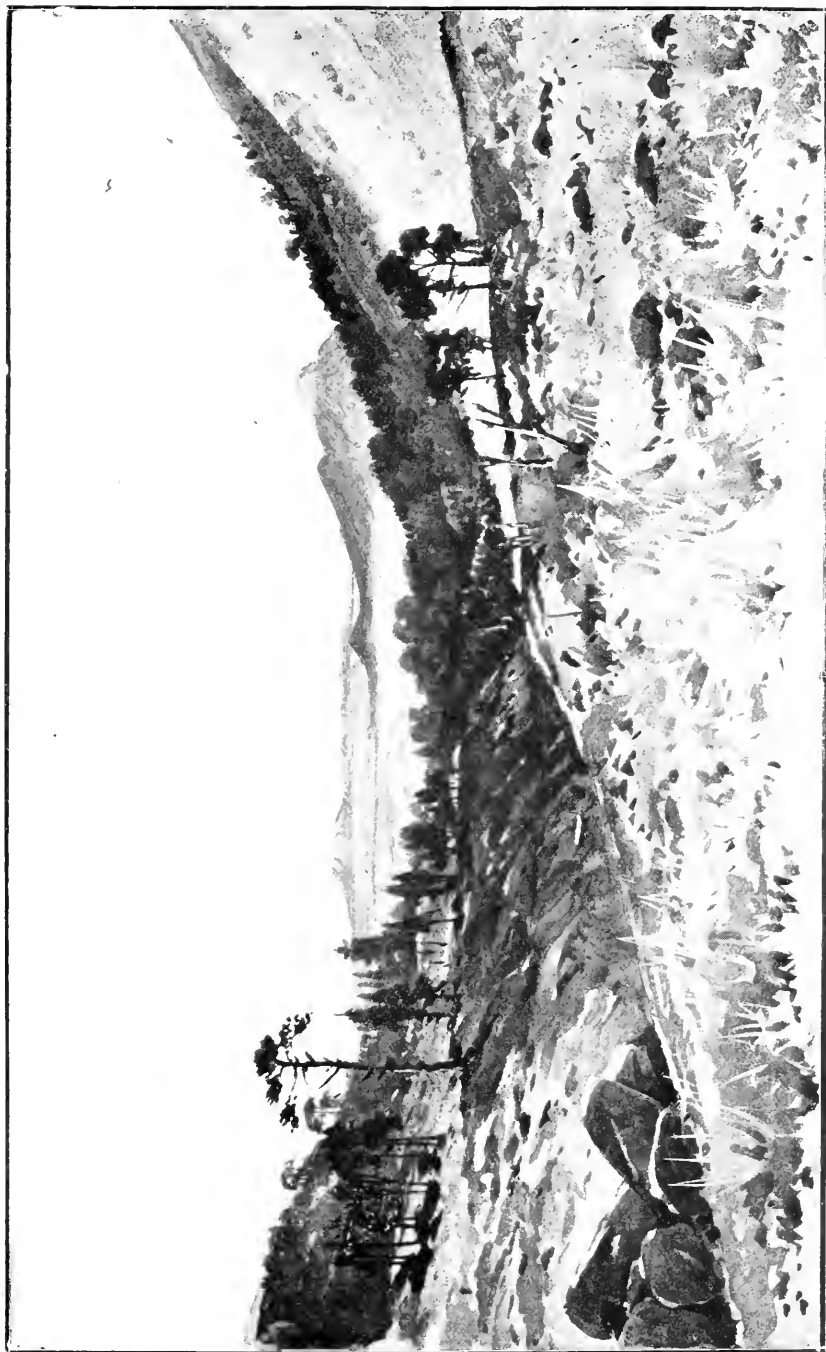


Fig. 6. View of Popocatepetl and Ixtaccihuatl 100 miles distant, and Malinche from glacial moraines on side of Orizaba at 13,000 feet. (Drawn by G. Stratton Ferrier, R.I., after sketch by H. M. Cadell.)

Canoas, the eastern by the chain of Inguarán, while towards the south rise range after range of mountains until in the far distance the great Sierra Madre del Sur closes the view. Only immediately to the west of the cone is there a comparatively level space of $3\frac{1}{4}$ square miles covered by the lava-flows of Jorullo. Rising from the plateau of Higuera, and ranged in a line running from N. 35° E. to S. 35° W. true, stand four cones, not six as older observers reported. These are the vents of Jorullo, though only the largest of the four is properly so called, the other minor (not parasitic) cones being termed 'volcancitos' or small volcanos.

The Chief Cone.

Although the highest part of the cone (termed by Ordóñez Pico de Riaño) reaches 4,330 ft. above sea-level, Jorullo is not imposing from its size, for even on the west side it only rises 1,312 ft., and on the east side only 574 ft. above its base. It is hardly an exaggeration to say that there are scores of nameless volcanoes in Mexico of equal size, though not of equal interest.

It is of regular conical form, its summit broadly truncated by a comparatively large crater. Its sides slope at angles varying from 28° to 35° , the higher angle being met with on its southern and western sides. It appears most symmetrical as seen from the south, on which side, more especially, its slopes are traversed by numerous narrow, deep, and straight radiating furrows or barrancas due to erosion. It is most impressive as seen from the west, as on that side its height above its base is greatest. Seen from the west the latest (No. iv) lava-flow rises as a lofty black prominent and very conspicuous ridge forming an unsymmetrical appendage on the north side of the cone. (Fig. 1.)

To resume the account of our visit. August 28th. In the early morning we walked down the hill at Mata de Platano, crossed the stream at its foot, and followed a dry stream bed, in well-stratified black lapilli of Jorullo, to the east side of the cone, where the ascent proper began. The outer slope of the cone is composed of completely incoherent black lapilli mostly about the size of peas. In this soil grows from foot to summit of the cone a dense tropical vegetation of mimosas or acacias and other trees (reaching 15 or 20 feet in height), shrubs, grass, and maidenhair ferns. The grass does not form a continuous covering, but everywhere the lapilli are exposed, and nothing

essential appears to be concealed, so that the luxuriant flora can hardly be considered a drawback by the geologist, while it greatly adds to the attractiveness of the ascent. We were half-way up the cone when a tropical downpour of rain began and lasted half an hour. The sky cleared and we soon reached the north-eastern summit of the crater rim which Mr. E. Ordóñez has christened Pico de Humboldt. From this point there is a splendid view of both the immediate neighbourhood and the more distant country.

The Crater.

The first feature to arrest our attention was the crater. It is ovoid in form, and measures along its major axis from north to south 568 yards by 421 yards from east to west, and its depth from the highest part of the rim is 489 ft. A breach 500 ft. wide and about 200 ft. deep has been formed on the northern side by the last outflow of lava. While the exterior of the cone consists of lapilli and agglomerate the interior of the crater forms an inverted conical cavity coated with lava weathered to a reddish-brown and almost bare of vegetation. A series of curved fissures formed by the contraction of the lava in cooling has allowed the inner lava lining of the crater to sink in a series of terraces bounded by steep or vertical walls. The rim of the crater is a mass of very scoriaceous rough lava, very difficult to walk over, and in places very narrow. We made our way, however, along it to the west side of the rim, whence a bird's-eye view of the lava-streams is obtained.

The Lava-Streams and Fumaroles.

Ordóñez¹ gives an excellent geological map, scale $1/_{30000}$ or 2·11 inches to 1 mile, of the Jorullo volcanoes (from which, curiously enough, all the watercourses are omitted). According to his map and description Jorullo gave rise to four² lava-

1. *Loc. cit.*

2. According to a map (Plate vi) given by Mr. Andres Villafana in his paper "El Volcán Jorullo" (Parergones del Instituto Geológico de Mexico. Tomo ii, Numero 3, Mexico, 1907) there were *five* lava-streams. The first agrees fairly well with No. 1 (Ordóñez) except that it includes a large area immediately West of the Volcancito del Norte which Ordóñez maps as part of No. 2; the second (Villafana) only includes that part of No. 2 (Ordóñez) to South of No. 3 (Ordóñez); the third only includes the southern part of No. 3 (Ordóñez), the rest being attributed to the first lava stream; the fourth corresponds with the most easterly part of No. 3 (Ordóñez) and occupies a small area north of the Cerro Partido; the fifth corresponds with No. 4 (Ordóñez). There is evidently room for further study of the volcano in the field.

streams, which Ordóñez calls 'malpays,' literally 'bad lands.' The first and oldest of these was the most extensive, and each succeeding one was of less extent. The first flow was the first feature to be formed after the opening of the vent or vents, and like the second flow probably issued from the western foot of the Higuera plateau. It covered an area about 3,280 yards long by 3,060 yards broad, or approximately $3\frac{1}{4}$ square miles. The second flow covered a little more than half the area of the first, and in most places overlies its predecessor. The margin of the second flow forms a kind of wall 130 to 160 ft. high. Ordóñez holds that not until these two flows had taken place did the vents enter on an explosive phase and form the four cones which we now see. The last two of the four lava-flows took place exclusively from the main cone of Jorullo itself by the breach already mentioned. Looking down upon lava-stream No. iii from the summit of the cone, we could clearly distinguish its margins and its black surface, and even trace the great curved wrinkles of its surface, their convexity facing downstream and outlined by green lines of vegetation growing on it. The fourth and last of the lava-streams is so fresh and devoid of vegetation that I think personally it must be much later in date than the first. Its surface is not ropy, but exceedingly rough, scoriaceous, and of the 'aa' type of the Hawaiian volcanoes. Just outside the crater, the upper surface of the stream having solidified, while the still liquid lava within flowed on, a tunnel was formed in the lava, the roof of which ultimately collapsed and left a channel full of débris about 1,640 yards long, about 230 to 330 ft. wide, with walls 16 to 33 ft. high. This is called the "Calle de las Ruinas" or "Street of Ruins."

As already mentioned, the latest lava-stream forms a prominent ridge, and its sides, far from lying in or accommodating themselves to a pre-existing valley, rise with almost wall-like precipitous steepness from the surface of the cone. Another noteworthy point, well shown on the map of Ordóñez, is the fact that all the lava-streams have flowed to the west or north and not to the east (except a portion of the latest stream). This westerly flow is due to the westward slope of the plateau of Higuera. Several fumaroles, which at present give off only steam at a temperature of $75^{\circ}\text{C}.$, occur in the crater and on the latest lava-flow, and Ordóñez found a temperature of $165^{\circ}\text{C}.$ at a depth of 1 metre in a fumarole on the last lava flow.

The Volcancitos and Volcanic Bombs.

From the crater rim of Jorullo the volcancitos are well seen. Like the main cone, the volcancitos are composed of lapilli from the size of a nut to that of a fist, and like it too are clothed with verdure from base to summit. The Volcancito del Norte is about 1,500 yards north-east of the main cone, rises to 3,903 ft., or 377 ft. above its eastern base (the plateau of Higuera); the Volcancito de Enmedio (middle cone) lies about 1,500 yards south-west of the main cone, rises to 3,411 ft., or 180 ft. above its eastern base; while the Volcancito del Sur (southern cone), about a mile south-west of the main cone, rises to 3,592 ft. or 394 ft. above its base. In all three cases the western base is 180 ft. lower than the eastern. Between the main cone and the Volcancito de Enmedio are several mounds of volcanic sand and lapilli, which have been regarded by previous observers as additional cones, but which, according to Ordóñez, show horizontal bedding-planes and not the structures characteristic of cones of eruption. The outer slopes of the volcancitos are as steep as those of the main cone, reaching as much as 35°. All three volcancitos are horse-shoe shaped, being breached on their western side. Mr. Ordóñez gives an explanation of this breaching which I find it difficult to accept. He says:¹ "En effet, ces cônes, peu élevés et d'un volume relativement faible, reposaient sur la lave, alors incomplètement solidifiée; et celle-ci dans son mouvement lent de descente, entraîna avec elle, la partie de ces édifices, qui avait pour base cet instable piedestal, et leurs pans détachés, perdirent l'équilibre et se réduisirent en morceaux." I should have thought it more probable that each was breached in the ordinary way by an outflowing lava-stream,² but Mr. Ordóñez maintained that such was not the case, and time did not permit me to settle the question by an adequate examination of the ground.

The volcancitos are characterised by the abundance of volcanic bombs, which occur in their cones and appear to be absent from, or scarce in, Jorullo proper. These bombs are spherical, ellipsoidal, or fusiform, and sometimes show the

1. Loc. cit., p. 36.

2. Mr. A. Villafaña (p. 86 of his paper previously mentioned) agrees with me, he says (trans.): "This rupture of the craters causes one to believe that in the case of each of them there was an emission of lava and that it breached the cones," but he does not appear to have verified this view by examination of the ground.



Fig. 7. Sierra Negra from foot of snowline on Orizaba.

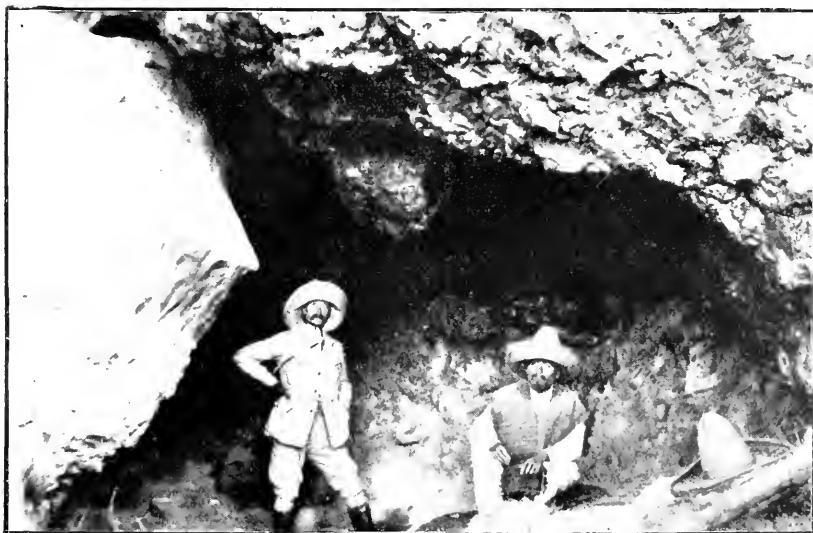
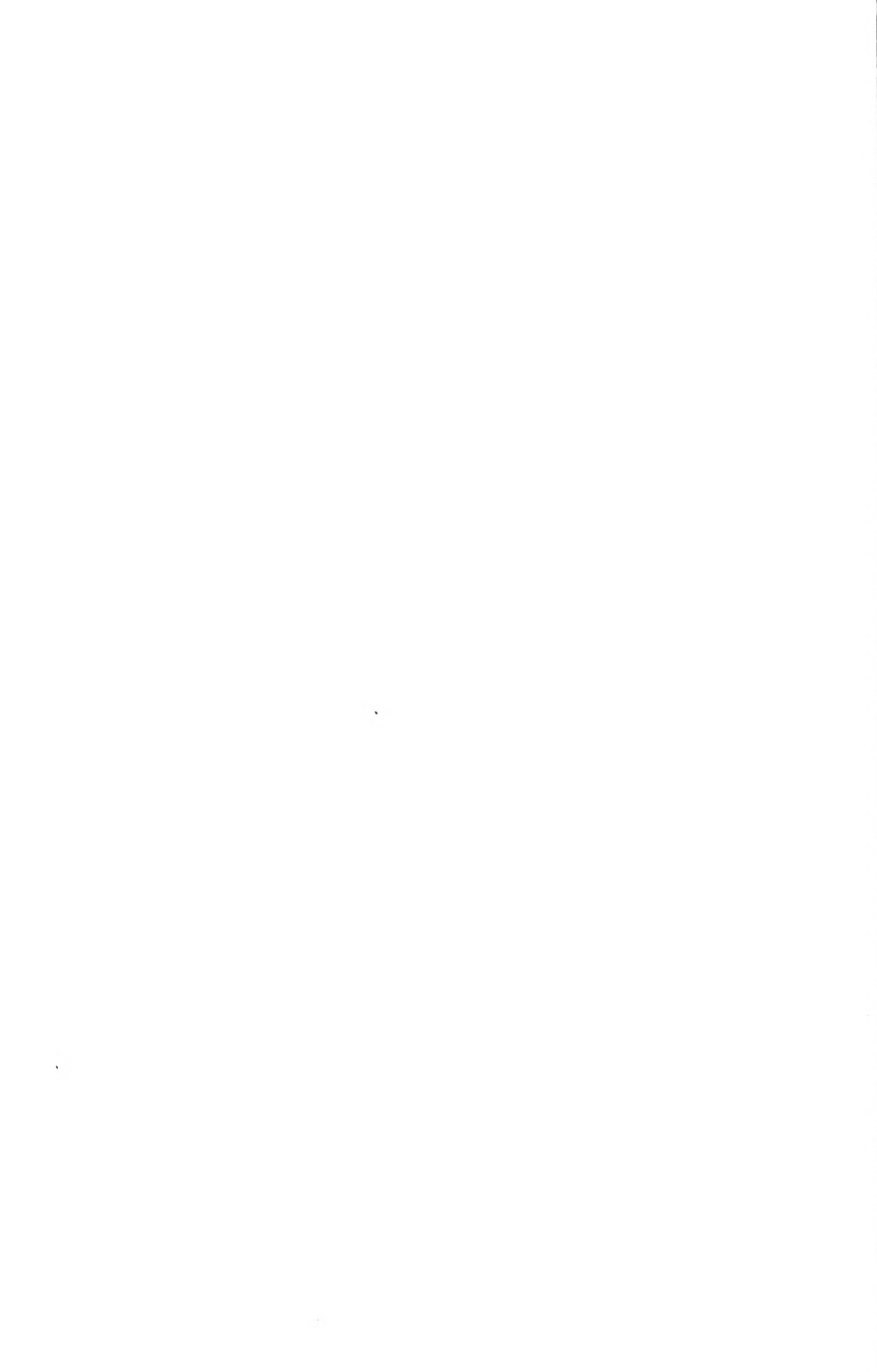


Fig. 8. Mr. Cadell and guide Augustin in cave on Orizaba.



fractured concentric layers known as bread-crust structure. They are mostly as big as a man's head, but may reach a cubic metre in size. On our way back from Jorullo to Mata de Platano on August 28th, we saw many excellent examples of them in the southern slopes of the Volcancito del Sur. On August 29th we left Mata de Platano and walked along the eastern foot of Jorullo, and then turned westwards along the southern side of the Volcancito del Norte and the northern edge of the latest lava-stream of Jorullo, afterwards crossing flows Nos. iii, ii, and i, which are more or less covered with vegetation which is not dense, the trees occurring scattered as in a park.

The Hornitos.

We examined several 'hornitos' (literally 'little ovens'). These are circular or elliptical mounds, generally perhaps 10 to 15 ft. long and 3 to 5 ft. high, consisting externally of numerous layers of incoherent small black lapilli or volcanic sand, each layer from one-fifth of an inch to 2 inches in thickness, arranged concentrically and parallel to the outer surface, forming domes with quâ-quâ-versal dip of the layers. Most of the hornitos have an opening through which gases and vapour formerly escaped, and they all contain a solid or hollow nucleus of the underlying basaltic lava.¹ They are simply surface vapour vents of the lava-streams coated with layers of volcanic sand and lapilli which, occurring in thick accumulations near the four cones, overspread the older lava-streams of Jorullo, but not the latest, which hence appears to be the result of the final effort of the volcano. The hornitos do not agree with Humboldt's description, part of which is as follows: "Each of the numerous Hornitos consists of weathered balls of basalt, with pieces separated in concentric shells; I could often count 24 to 28 such shells. The balls are somewhat spheroidally flattened, and are mostly 15 to 18 inches in diameter; but also vary from 1 to 3 ft. . . .² The soft mass of clay which unites the balls is, strangely enough, divided into curved lamellæ, which wind about through all the interstices of the balls." In this description Humboldt appears to have been in error.

1. For details see the paper by Ordóñez already mentioned.

2. I translate from the German edition of "Kosmos," vol. iv, pp. 340, 341 (J. G. Cotta'scher Verlag, Stuttgart, 1858); English version (Bohn's, 1865), vol. v, p. 317.

As to the petrographical nature of the lavas of Jorullo, according to Ordóñez they are olivine basalts, and there is no appreciable difference between the successive lava-streams.

Humboldt's Craters of Elevation.

Humboldt¹ considered Jorullo an example of one of Von Buch's craters of elevation due to the swelling up of a pre-existing surface. Of this there is not the slightest evidence. Mr. Ordóñez² thinks the eye-witnesses of the welling up of the earlier lava-streams of Jorullo were misled by them into thinking that the ground had risen in swellings.

The possible existence of a Line of Fissure.

Mr. Ordóñez, while not rejecting *a priori*³ the hypothesis that the four cones of the Jorullo group are on a line of fissure, does not favour it. He says:⁴ "A peine le sable volcanique est il emporté de quelque endroit immédiatement voisin des cônes que déjà, le basalte ancien des plateaux apparaît dans sa position primitive, sans avoir éprouvé, par suite des éruptions le moindre déplacement. C'est pour cela que nous croyons que les cônes se sont formés autour de petits tubes, ou cheminées, et non sur une fracture continue." With regard to the No. i lava-stream he says:⁵ "L'observation du terrain semble établir que, dans la formation du malpais le plus étendu et le plus ancien, ont participé des laves qui sortaient simultanément, des quatre bouches et qui, dans leur course, se sont fondues au point de ne plus constituer qu'un seul gâteau." Mr. A. Villafaña agrees with Mr. Ordóñez.

With all deference to Mr. Ordóñez I venture tentatively to suggest the following hypothesis. We may have here a most interesting example of the transition from fissure eruptions to crater eruptions. The lava-streams Nos. i and ii, each of which, as I understand him, cannot be separated into portions according to the vents which gave rise to them, may well have both issued from a fissure. This fissure being partially obstructed, may then have retained four openings through which the fragmental materials of the four cones were ejected.

1. "Kosmos," vol. iv, pp. 340, 336.

2. Loc. cit., p. 42.

3. Loc. cit., p. 22.

4. Loc. cit., p. 23.

5. Loc. cit., p. 41.

Finally, the vent of the main cone alone remained open and gave rise to the last two lava-streams.

After examining the hornitos on August 29th we made our way to the Hacienda La Playa, whence we rode to Arrio, and on the 30th to Patzcuaro, which we left on the 31st by train for Mexico, arriving there at 6-30 a.m. on September 1st. On the 2nd a party of 76 of us left by the Interoceanic Railway on the Eastern Excursion to Vera Cruz *via* Jalapa, returning by the Mexican Railway to Mexico on September 5th. The official opening of the Congress took place on the 6th, and its proceedings terminated on the 14th. On the 11th a special train carried a party of more than 200 geologists to San Juan Teotihuacan, 29 miles north-east of Mexico. Teotihuacan is the sacred city of the ancient Toltecs, and is celebrated for its two pyramids, that of the Sun being 216, and that the Moon 151 ft. in height. They are built of quite irregular blocks of lava. Many flakes and one or two arrow-heads of obsidian (volcanic glass) were picked up by the party on the pyramids.

I was obliged to leave Mexico city on September 13th, to catch the steamer for England, but my friend, Mr. H. M. Cadell, was more fortunate, and was able to ascend the Peak of Orizaba and Popocatepetl.¹

PEAK OF ORIZABA.

The Peak of Orizaba derives its present name from the city of Orizaba, near which it rises, and is also known by its ancient Aztec name Citlal-tepetl (Star Mountain). Its height is 5,549 metres (18,205 ft.). It was at one time considered to be the highest summit in North America, but it is surpassed by Mount McKinley (20,464 ft.) in Alaska. The volcano was in activity from 1545 to 1565, and since then there seems to be no record of an eruption. Mr. Cadell and five other geologists left Mexico city on September 17th, taking train to San Andres (alt. 7,972 ft.), on the Mexican Railway, distant from Mexico 137 miles. From San Andres they rode by tramcar to Chalechicomula, whence they started next morning on horseback, accompanied by six pack-mules, a guide and a *rurale* for the mountain. The path at 800 ft. above Chalechicomula ran into a forest of pines, which continued to 12,000 ft. at least.

1. See his detailed account, "Some Old Mexican Volcanoes," *Scottish Geog. Mag.*, June 1907

At that point the trees became thinner and the path began to wind about among stone-sprinkled mounds that at once recalled the moraines of old glaciated countries. All doubt on this point was set at rest, when at one place a conspicuous boulder about six feet long, appeared lying against the side of one of the mounds and furrowed from end to end with magnificent glacial striae.

The view westwards from the moraines at 13,000 ft., across the valley of Puebla, included the great dark cone of Malinche (on the right) and the snow-clad crests of Popocatepetl (on the left), and Ixtaccihuatl (*i.e.*, "White Woman," in the centre), a hundred miles away. (Fig. 6.)

The Sierra Negra is the dark, bare cone of a separate volcano of great size, which does not quite reach the snowline. It is covered with talus slopes of débris (fig. 7), and is separated from the main peak of Orizaba by a flat saddle between two side glens.

To resume the account of Mr. Cadell's ascent. At a height of about 13,500 ft. a cave in the volcanic rock about 7 yards long by 3 in width, served as shelter to the party for the night (fig. 8). About 5-30 next morning, after a sleepless night, the ascent was resumed. It was as much as the horses could do to carry the party up to the snowline, which was reached at 7-30 a.m. From this point the slope of the upper 3,500 ft. of the cone was found by clinometer to be from 35° to 42° nearly all the way up. With a great effort the party reached the top about one o'clock, without a slip, after a climb of five and a half hours.

Suddenly they found themselves on the brink of the great crater. The air was bitterly cold and the biting wind threatened to envelop them in a rising cloud of snow. The swirling clouds lifted for a short time and disclosed an awful gulf, whose bottom was shrouded in thick mist. The walls were of pale red andesitic lava, and the crater seemed to be about a quarter of a mile in diameter. Gazing eastwards the eye swept over a vast sea of fleecy clouds, through the rifts in which the blue waters of the Mexican gulf could be descried here and there. The descent began at 1-45, and as this was a more dangerous, although less laborious, operation than the ascent, the party was roped together, a precaution which saved them from the fatal consequences of some slips on the way down the ice slope. The descent occupied about two hours. Next morning after

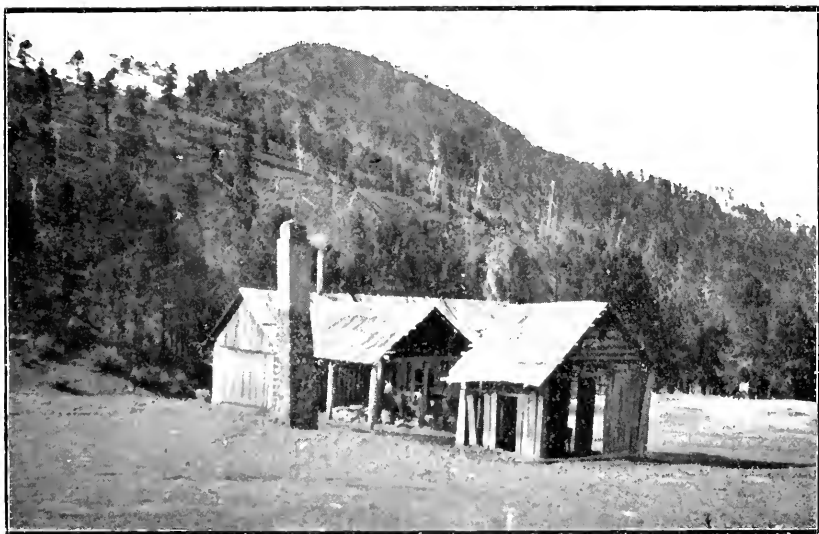


Fig. 9. Sulphur Ranch of Tlmacas (12,987 feet).

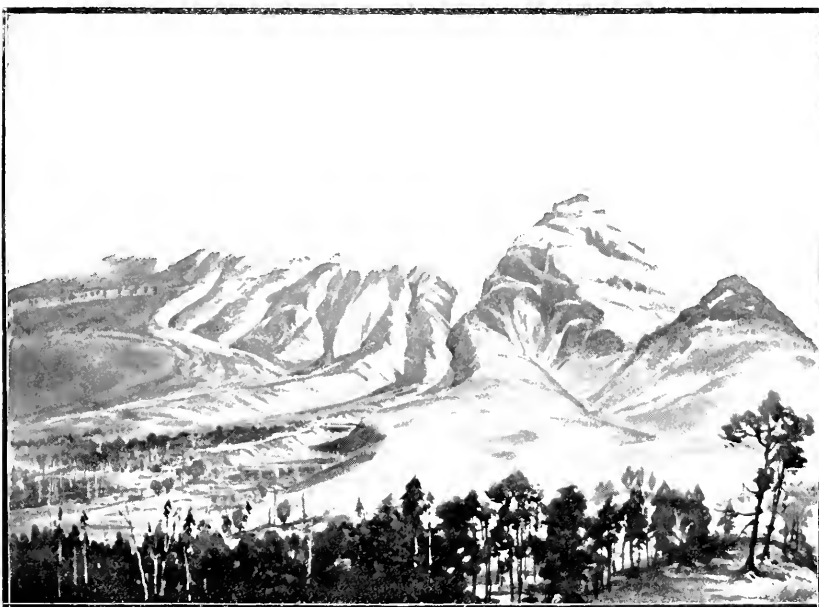


Fig. 10. Crest of Popocatepetl from Tlmacas.
(Sketch by H. M. Cadell.)

another sleepless night in the cave, they rose at 4-30 and left two hours later for Chalchicomula, which was reached at 11 a.m. Here they parted with their faithful guide Augustin, who explained that, for white men, they had climbed very well.

Popocatepetl.

The Aztec name Popocatepetl means "Smoking Mountain." This grand volcanic peak lies 44 miles south-east of Mexico, and attains a height of 17,876 ft. It was in full activity from 1519 to 1523, a small eruption occurred in 1539 and in 1664 it threw out ashes for several days. Its oldest lavas are olivine basalts, but the greater part of the mountain consists of hypersthene-andesites, and the latest lavas are hypersthene-trachytes.

Mr. Cadell and two Finnish geologists made the ascent of Popocatepetl. Leaving Mexico city on September 24th they took train to Amecameca, 36 miles away, and 8,570 ft. above sea level. There they obtained horses, guides and provisions. Next morning they soon reached the forest zone, consisting at first of spruce firs and higher up of pines. Many of the trees near the top of the forest zone were dead and blasted, standing gaunt and bare or lying bleached with the storms of years. Thunderstorms are of daily occurrence in the summer months, and some of the stems had been recently ripped up by lightning, and no doubt this is the cause of much of the destruction of these high forests. There is a good path all the way up to the Sulphur Ranch at Tlamacas (fig. 9), where the party halted for the night. The ranch is situated at 12,987 ft., a short distance below the upper limit of trees. It was here that General Ochoa distilled the sulphur collected from the interior of the crater. This dangerous industry has not been carried on for the last twenty years, but the wooden sheds adjoining the refinery, although rather leaky overhead, are still useful as a shelter for visitors to the crater. From the ridge above Tlamacas there is a good view of the summit (fig. 10) which towers in dazzling whiteness over a broad bare pedestal of black ashes furrowed with barrancas into which the snow projected in sharp tongues like glaciers. After a sleepless night on the sulphur ranch, the party rose at five, and started at six in the morning. The trail led over black ashes with tufts of grass, thistles and scanty vegetation to the snowline

at 14,272 ft.¹ The snow was very soft, and all the way up there was no difficulty in obtaining a good footing. The snow slope was between 30° and 35° most of the way up. The edge of the snow was reached at 8-30 and the summit at 11-30. After three hours in ascending the snow slope the abyss of the crater opened in front of the party in all its grandeur, and they sat down to rest astride the brink and gazed in silent awe into the fearsome pit. The crater was free of clouds and perfectly visible: its walls were seen to be made up of thick beds of red volcanic rock with vertical faces and low ledges between them on which the snow was lying in patches, while fringes of great icicles hung over the jagged projections. From the bottom of the crater fumaroles ascended as a pale cloud in great puffs under considerable pressure. As it circled upwards the sulphur condensed in a dull yellow skin on the face of the dark red lava, and this, combined with the white snow, patches of which reached down to the margin of the brilliantly green crater lake in the centre, produced a most remarkable combination of colour and weird scenic effect.

The descent from the crater was an easy and delightful ride. Mats were doubled up to make comfortable tobogans each for two people. The Indian guides sat in front with sticks to prevent a run-away, and their European passengers behind. Off they sped at four or five miles an hour, and in fifteen minutes landed in the soft snow near the ashes. An hour's quick walk took them back to the ranch for dinner. By two o'clock they mounted their horses for the homeward journey. Amecameca was reached at a quarter-past six, and the return to Mexico was made next morning after three nights' absence from headquarters.

EXPLANATION OF FIGS. 1, 2, & 3.

DESCRIPTION OF PHOTOGRAPHS. (By B. H.)

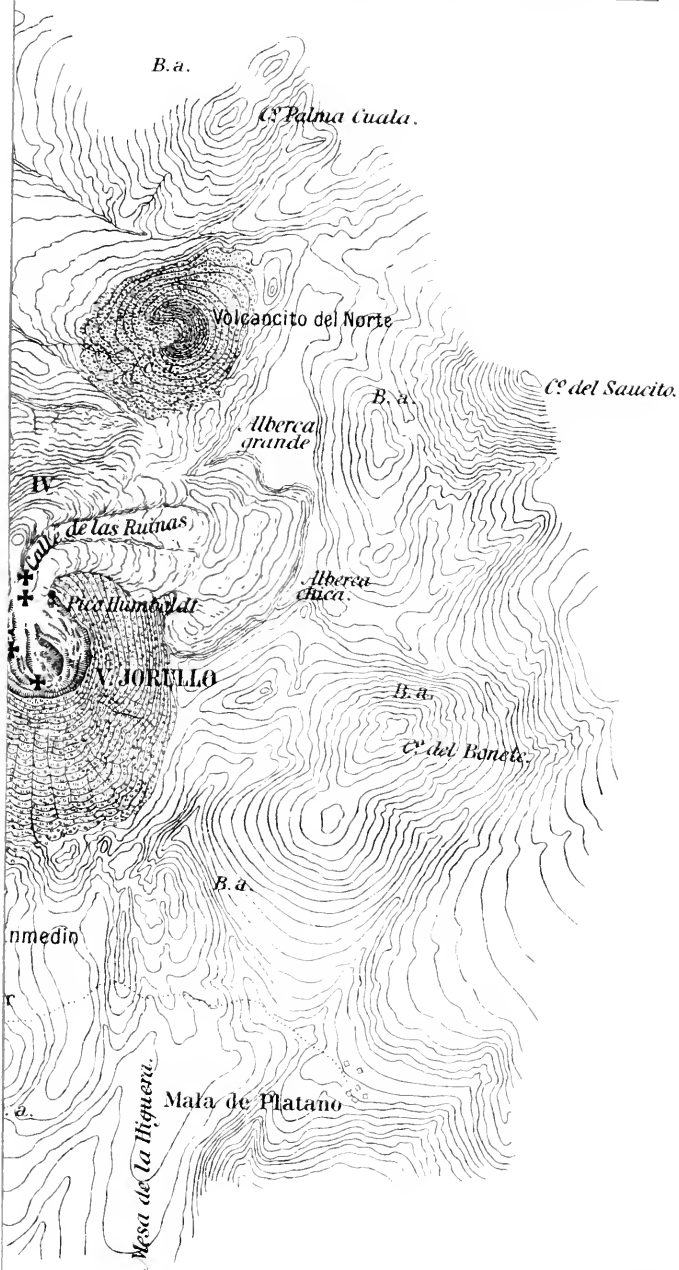
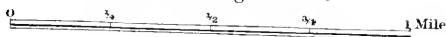
Fig. 1. Jorullo. Figs. 2 and 3. Nevado de Toluca.

- FIG. 1.—View of Jorullo from the magnetic west, showing its wooded slopes, the latest, No. iv, lava-stream issuing from the cone high up on the left, and in the foreground the park-like vegetation on the No. ii lava-stream.
- FIG. 2.—View of the crater of Nevado de Toluca. The bridge-path leading down into the crater on the right, a part of the Laguna Chica with the

1. According to Aguilera and Ordóñez, "Expedición científica al Popocatepetl," Comisión geológica Mexicana, 1895.

MAP BY E. ORDÓÑEZ
GUAYMAS

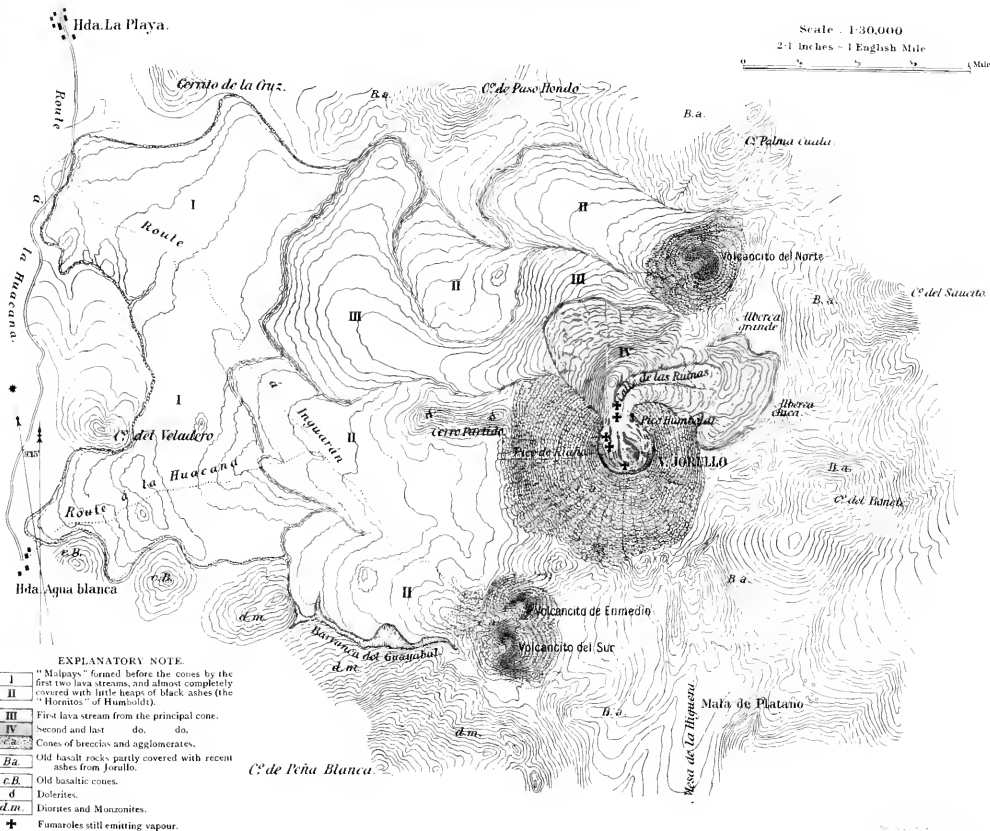
Scale : 1:30,000
 2.1 inches = 1 English Mile



GEOLOGICAL MAP OF THE VOLCANOES OF JORULLO BY E. ORDÓÑEZ
TOPOGRAPHY BY A. VILLAFÑA AND A. ANGUIANO

Scale . 1:30,000

2.1 inches = 1 English Mile



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central lava dome immediately behind it, and behind the dome the interior slopes covered with screes; and on the left the Pico del Fraile, or highest point of the crater rim.

FIG. 3.—View of the crater of Nevado de Toluca looking N.E. from high up on the S.W. crater rim. In the centre the Laguna Grande with the lava dome on the right, and in the right foreground part of a scree with patches of snow.

I am indebted to Dr. H. Woodward, F.R.S., the editor, and Messrs. Dulau and Co., the publishers, for the loan of the block of Figs. 1, 2 and 3, which illustrated my paper in the *Geological Magazine*, January, 1907. For the loan of the blocks of the other illustrations I am indebted to Mr. H. M. Cadell.

The map is reproduced from that illustrating Mr. Cadell's paper in the *Scottish Geographical Magazine*, June, 1907, by permission of the Royal Scottish Geographical Society.

SNAPSHOTS IN INDIA.

By Miss MARGARET DOWSON.

(Addressed to the Society in the Geographical Hall, on
Tuesday, November 19th, 1907.)

INDIA is the most populous area in the world after China, having a native population of 250 millions. It is about 1,900 miles long and 1,600 miles wide in the broadest part. The Himalayas (the name signifies "Abode of Snow") which stretch from East to West of the Northern part of the country are a magnificent chain of snow-capped mountains, 1,500 miles in length and between them and the great plains of India, there is a large tract of hilly country. It is up in the healthy mountain air of these sub-Himalayan regions that the hardy tribes of India are bred. South of this district we come to the great alluvial and well-cultivated plains which are watered by the Indus and the Ganges, and their tributaries. This part of India is densely populated, and it is through this part that we principally travelled, though we visited the hilly regions twice. Of the Deccan or Southern part of India I will not speak, as we did not go there. There is a marked difference between the natives of the plains and those of the hills. The former are generally speaking timid and meditative and perhaps what we in England should call lazy in their movements and are rather wanting in stamina, but they are, on the whole, good tempered and of gentle dispositions, while the hill tribes are enormously strong, especially the women, and they are lively and cheerful and full of healthy vigour.

India is a land of contrasts. There are extremes of climate and every variety of scenery, and the inhabitants are equally varied.

Splendour and squalor are often seen side by side, and the one seems to be quite as much a national characteristic as the other.

One constantly sees a primitive looking bullock cart crunching sleepily along, with its solid wooden wheels, the make of

which dates from about 2,000 years ago, side by side with a modern electric tram. I think, that what struck me as much as anything though, was seeing the native life going on much as it has done for hundreds, nay, thousands of years, apparently quite regardless of, and quite unaffected by all the signs of modern western civilization which are springing up around it, and as one passes by one feels that the thought and the habit of centuries which we are hardly able to understand, are ingrained in these people, and whereas they seem to be always clinging to the past, we westerns are always seeking for some new thing in the future. You have, therefore, in the mass of the natives, an unconquerable adherence to native opinions and usages combined with servile submission to a foreign yoke. Night succeeds day in India with scarcely any of that interval which we call twilight, thus making another striking contrast from light to darkness, and from heat to chilliness.

Lord Curzon, in a speech at the Guildhall on the occasion of his receiving the freedom of the City of London, said: "We have to deal in India with races that are as different from each other as the Esquimo is from the Spaniard, or the Irishman from the Turk, with creeds that range between the extreme points of the basest Animism on the one hand, and the most exalted metaphysics on the other, with standards of life that cover the whole space between barbarism and civilization." I should like to say something about the past history of India and about the village life of the people. Ages ago, how long ago, no one knows, India was inhabited entirely by rude tribes who lived in caves and jungles, and they were almost as wild as the savage beasts among whom they lived. The first tribes to invade the country were the Tibeto-Burmans, from whom the Mongolians and Chinese have sprung, and the Kolarians and Dravidians, all of whom came from Central or Upper Asia through Afghanistan, where one of the vulnerable points of the Himalayas is to be found. They were only possessed of the merest rudiments of civilisation. Then a little later, viz., about 1500 B.C., came the Aryans of fair complexions, who were distinctly more civilized than the afore-mentioned Non-Aryan tribes, and they swept everything before them in the Northern part of India. The lower tribes of India to-day are the descendants of the defeated Non-Aryan tribes, who became the slaves of their conquerors, and the hill tribes are the descendants of those who took refuge in the hilly regions leaving the plain to

their victors, hence the Mongolian type of face which one sees up in the hills.

The earliest Indian literature dates from somewhere about the time of this Aryan immigration. The *Rig-Veda*, which is a collection of hymns, some of which are really very fine, is the oldest book of the Hindus. Then came the *Laws of Manu* and the two great epics, the *Ramayana* and the *Mahabharata*. These contain the laws and ideas upon which the Hindu customs and thought of to-day are largely founded. Politically, the country has from the earliest times been divided into small kingdoms, and naturally there was constant fighting for the supremacy and endeavours on the part of the more powerful monarchs to subdue and conquer the weaker ones, but gradually the imperial dynasties of ancient India were overthrown and gave place to a number of independent minor kingdoms, which in their turn yielded to a hardy tribe of invaders from Afghanistan under the leadership of Mahmud of Ghazni, who established the first Empire under Mohammedan rule about the twelfth century, and this in turn gave place to the great *Mughul Empire* in the 16th century, and it was at this time that a friendly feeling was established between Hindus and Mohammedans.

It was during the reign of the great *Mughul Emperors* that most of the beautiful buildings that we saw in India came into being. Baber was the first representative of this line of Monarchs, then came Humayan, then the great Akbar, who was great as a soldier, as a philosopher, as an administrator, as a legislator and as a man. Then came his son Jehangir, then Shah Jehan - who built the lovely *Taj Mahal* in memory of his wife and many another beautiful marble structure, and the last of the great Emperors of this line was Aurungzebe, who was a bigoted Mohammedan, and did much by his narrow-minded spirit and policy to wreck the *Mughul Empire*. The contrast between the effect of his short-sighted bigotry and Akbar's far-sighted wisdom and liberal policy was very great.

The *Mughul Dynasty* was eventually totally undermined by the *Mahrattas*, who were so successful that they quite hoped to get the whole of India under their sway, but it appears that in this *Mahratta* movement there was never anything elevated or patriotic, but that it continued from first to last to be an organisation of plunder. There was no native power strong enough to rule the rest and put an end to the incessant internal warfare

and lawlessness, so after the Mahrattas were totally defeated at the Battle of Panipat, in 1761, the English, who had been gradually gaining a foothold in India through their commercial enterprise, came forward and established the beginnings of a rule which is now supreme all over India. It is the knowledge that no native power could keep the peace among all the different races in India, that prevents the natives from trying to throw off the British yoke.

"India," Lord Curzon says, "must always remain a constellation rather than a single star, must always be a continent rather than a country, a congeries of races, rather than a single nation." But we are creating ties of unity among these widely diversified peoples, and consolidating those vast and outspread territories, though, as John Morley quoted from the language of Burke the other day: "How many a weary step must be taken before they can form themselves into a mass which has a true political personality."

I should now like to say a few words about the people. The Patriarchal system still prevails with them, that is to say the Hindu family may be described as a sort of Joint Stock Company in which the head of the family is Managing Director. He is generally the father or grandfather of the present generation of workers and all their earnings, until a few years ago, were under his absolute control. The system is such that there is no need to have any poor laws in India, for the common treasury into which the family earnings are put, supports all the members alike. The religious education of a young Hindu forms a very important part of his bringing up. When he is about 8 or 9 years of age he has to be initiated into the sacred pale of Hinduism, and at this ceremony those who belong to the higher castes, have the poitra or sacred thread placed round their necks, which is a sign of spiritual aristocracy, of which all who wear it are proud. They are told to repeat a certain text may be a hundred times daily, and they are initiated into all kinds of observances which, in the higher or Brahmin castes, occupy several hours daily if conscientiously performed.

In one sense the Hindus are the most religious people I have seen. If a question is asked in England: "Why do you do this or that?" the answer would be "I don't know," or "Others do it." In India it would be "Our religion ordains it." They are constantly observing some religious ceremony in their homes or by the riverside, for I believe all rivers are considered more or

less sacred, but the Ganges is believed to have the greatest power to wipe away all sins. Then they are continually visiting some Temple or roadside shrine with their offerings of flowers, money, and different kinds of food. The pilgrimages made to the most sacred cities of India, especially to Benares, form a very important part of their lives, too, though of course it is not all who are able to perform these journeys. The 3rd-class railway carriages are often crowded with brightly dressed natives journeying to some shrine or other in the hopes of getting absolution from their sins and of keeping in favour with all the different Gods. I cannot attempt here to give you any comprehensive account of Hinduism even if I could do it, for it would take much too long, but I want you to see what a large part these religious ceremonies play in the lives of the people. Behind all these ceremonies and outward observances, there is, at any rate in the case of the best Hindus, plenty of deep thought and real spiritual life, and it is the hope of all eventually to rise stage by stage to a reunion with the Supreme Deity. Perhaps some day when this religion has freed itself from idolatry and superstition it will become a great factor in the regeneration of the West.

As regards the industrial side of their lives these people are chiefly employed in handicraft work, and their prosperity largely depends upon the numerous handicrafts which are handed down from father to son as sacred trusts, but, alas! there seems to be a danger that these will gradually disappear owing to the introduction of the western machine-made goods. The shops are open to all without any windows. The streets are generally thronged with natives whose dark skins set off the lovely colours of their cotton chudders. A chudder is a piece of cotton cloth from 5 to 10 yards long, and it is draped over the upper part of the body. The women wear them over their heads and they frequently draw them over their faces when they have to pass you in the street. It is only the lower caste women who are allowed to be seen outside their own domestic prisons at all. The higher the caste the more secluded do they keep their women, though things are improving in that respect now. The lower caste women work as hard as the men, and since they are married when they are mere children, they grow old all too soon, and they look withered and shrunken at a comparatively early age. It is impossible to give you any adequate idea of the wonderful effect of all the shifting patches of

brilliant colours which you see in the streets. Orange emerald green, turquoise blue, lemon yellow, purple and pink, all lighted up with brilliant sunshine, which except during the rainy season scarcely ever fails one on the plains of India. Here is a further description of village life by a recent writer on India: "A village may often be distinguished by a special craft, by carvers in ebony or ivory, blackwood or stone, by some famous maker of swords or worker in lacquer, or a stall may glimmer with the brightness of glass beads and bangles. Behind the houses the looms will be at work, gay spaces of blue and purple and scarlet in the shadow of the green trees on which the frames are hung, and from which, as the shuttle is thrown to and fro, the scented blossoms fall upon the worker's fingers; while, further on, the dyers swing from side to side, across the width of the sunlit street, some length of intense and dripping colour. As the afternoon wears on, the women make their way to the well, their robes rich as illuminated letters in colour, brass chattis or brown water jars on their heads, there to loiter and gossip till the calm-eyed kine are driven lowing from the fields. Then, as the lights begin to glimmer in the darkness, the sound of songs rises from the cooking pots upon the cooling air. This picture of restful and contented village life is the picture of a life which is gradually ceasing to be, as the work of the hand craftsman is undersold and displaced by the products of the West."

Were it not for the great variety of races and languages in India, it would be almost impossible for England to hold her own there. If the people of India were animated by any strong patriotic feeling of nationality, England would never have stepped so easily into the position she now holds there. It is the want of cohesion amongst themselves which is at the root of the submissiveness of the natives to foreign rule.

We landed at Colombo in Ceylon and went from there to Kandy, thence we sailed from Colombo to Calcutta in a French steamer, and then went up to Darjeeling and back to Calcutta, then to Benares, Cawnpore, Lucknow, Agra, Delhi, Simla and back to Delhi, then to Jaipur, Udaipur and home from Bombay.

We were at Kandy in Ceylon during the last week of December. The weather was beautiful and summer-like, and on Xmas-day we had an early morning Ricksha ride. Although the temperature was between 70° and 80°F., the men who pulled us lept along at a great pace, running as fast as a horse would

trot. They are very amiable and ready to converse with you if they know any English. Ceylon abounds in flowering trees and shrubs, and banana palms cluster round almost every human habitation, and the vegetation everywhere is luxuriant in the extreme. The change from Colombo to Calcutta was very great. Besides the fall in temperature the atmosphere seemed comparatively smoky as we steamed up the river Hooghly and saw the sun set in a lurid glow behind masses of funnels, masts and buildings. The European part of the town is not strikingly different from a foreign Western town, but the native streets are chiefly composed of rows of more or less squalid hut-like dwellings and rows of small open shops in which you see the natives working at their particular trade. I have heard Calcutta described as a City of Palaces and Pigstyes.

The process of getting from Calcutta to Darjeeling occupied about 24 hours. Darjeeling stands about 7,000 feet above the sea level, and the latter part of the journey is a gradual ascent in a small mountain railway train with everchanging and often magnificent views opening up as you rise higher. A very common means of locomotion at Darjeeling is a sort of coffin-shaped box or Dandy, made more or less comfortable with cushions. After taking your seat in it you are lifted high up into the air by strong Chinese-looking men who are called "coolies," and they carry you along on their shoulders by the aid of poles attached to the sides of the Dandy. There are quite a variety of hill tribes to be seen frequenting the Bazaar at Darjeeling, the Tibetans being among the most evident. They are often to be seen trying to sell Buddhist prayer wheels in the road, and they will sometimes run after you and try to bargain with you. The wheel is stuffed with paper on which there are written prayers and the turning round of the whole thing like a baby's rattle and the repetition of the three words Om Padmi Om, is supposed to render the prayers effective.

The Bazaar containing the native shops rises tier above tier up the hillside. The railway station lies just below. When we arrived, we found strapping young women at the station ready to carry our boxes on their backs, however heavy they might be, up to the hotel which stands a good height above the station, and we were told that on one occasion a woman actually carried a piano all the way up on her back, though I am afraid that was the last thing she ever did carry. We saw women carrying baskets on their backs with great loads of stones in them, by

means of a strap which passes under the baskets and across their foreheads.

It is a cold climate in winter, and while we were there we hardly saw the sun at all, for we were wrapped in rolling mists which hid the splendid Himalaya mountains from us nearly all the time, though one morning for a very brief space we had a never-to-be-forgotten glimpse of the majestic Kinchinjunga range.

Our journey back to the Plains was begun in the evening. Part of our course lay through dark woods and jungles, and a kind of bonfire was burnt on the engine, the flaring light of which was intended to scare away any wild animals which might be about.

Benares, which was the next place we visited, is a very ancient city, and also the most sacred city of the Hindus. It is situated on the banks of the Ganges or Mother Gunga, as the people fondly call it, and the river is here nearly a mile wide. It was a flourishing city six centuries before the Christian era, and it is dedicated to the worship of Siva one of the three great Hindu Gods. There are one or two curious legends which are believed to be the explanation of the sacredness of the city. One of them is that the god Siva quarrelled with the god Brahma for supremacy, and in the course of the struggle Siva cut off one of Brahma's heads, and the consequence was this severed head adhered to one of his hands and he wandered about from place to place and from shrine to shrine in a miserable plight, and it was not until he came to Benares that he found deliverance. The Hindus have ever since then sought Benares with all its multitudinous temples and shrines, as a place where all their sins will be forgiven them, and if they can only be there at the time of their death, they believe that entrance to heaven is assured to them so long as certain ceremonies are observed. The city abounds in Hindu Temples, and here and there the tall and slender minarets of some Mosque stand as monuments of the Mohammedan faith which, however, has no longer any power in Benares. The district was at one period a stronghold of Buddhism. The streets just behind the imposing river front are very narrow and crowded with pilgrims and natives passing to and fro to some shrine or temple. The number of temples in Benares is legion, for all those who can afford build a new temple before they die, in order to "acquire

merit," and it is the number which counts, not the size, so small new temples keep springing up every year.

In the early morning we drove from our hotel to the river along streets where we saw men sitting cross-legged on the pavement and cleaning their teeth and performing their ablutions quite in the open. All the natives pride themselves on their teeth, and they manage to keep them beautifully clean and white. When we reached the river side we took our seats on a barge-like boat which conveyed us slowly down the river a little distance from the shore, and we were confronted with a wonderful scene. Swarms of gaily dressed natives and pilgrims come every morning between 6 and 8 a.m. to bathe in the sacred river and worship the rising sun. The God Vishnu is said to have declared that Gunga came from her heavenly abode in the Himalayas with the express purpose of taking away the sins of man, and pilgrims arrive every day from all parts of India to bathe in its soul healing waters. Many of them walk hundreds of miles, and some think they will acquire more merit by measuring their length on the ground as they go. The whole scene as we passed slowly down the river was alive with shifting colour as the natives swiftly and dexterously changed their wet garments for dry ones and we saw rafts filled with worshippers bearing their caste marks on their foreheads.

Big primrose-tinted umbrellas made of palm leaves under which the Priests or Brahmins sit, are quite a feature in these wonderful riverside scenes. Processions of pilgrims come round from the town to the ghats or bathing places on their way to the river, whilst others, many of them women, pretty to see in all shades of tawny gold, primrose, saffron, or salmon pink, are climbing up the steps carrying their well-polished brass bowls full of Ganges water and saucers full of flowers to be offered at some Temple shrine. It is a busy scene, and one realises how important these ceremonies are to the people who perform them. Along the riverside there are many square cavities in the walls in which the young priests live for a time. Their heads are shaved entirely except for one lock of hair in the centre of their heads, by means of which they hope to be lifted into heaven.

At one point we passed a woman sitting on a raft, holding her nose and suspending her breath, which is part of the ceremony of prayer with the Hindus, and a little further on was a fine looking man standing on a raft and muttering his prayers. "As a means of cleansing the heart from sin, he takes up water

in the hollow of his hand, inhales a little with one nostril and exhales it by the other, and concludes the ceremony by again sipping. He worships the sun again standing on one foot and resting the other on his ankle, looking towards the east and holding his joined hands open before him, repeats his prayer." Such scenes as these with a background of Temples and Palaces and great flights of stone steps extend along the river front for about 3 miles.

We visited one or two of the Temples and were much struck with the way in which monkeys and other animals were allowed free access even to those parts of the Temples which we were not allowed to enter nor were our shadows allowed to pass over them.

We also visited a Monkey Temple in which monkeys scamper about wherever they please. We saw the pilgrims going up to the shrine with their offerings of ghi, a kind of half liquid butter, marigolds, etc., and before they reached the shrine they touched a bell which hangs from the centre of the roof, to warn the god of their approach.

We passed close to one of the Burning Ghats or Cremation grounds, and one day a dead body tied on to a very slender bamboo raft and wrapped round with a white cloth, was being carried down to the riverside where it was to be placed on a pile of faggots and then either wholly or partially covered with wood according to the wealth or poverty of the relatives. If any but a son sets fire to the pile woe betide the soul of the departed, and the body must be placed with its feet to the river. Such are some of the strange superstitions of these people, but their religion and its ceremonies are amongst the most important business of their lives and so it has been going on for thousands of years.

At Cawnpore the terrible experiences of the mutiny were brought vividly before our minds, as we were shown the different scenes of their enactment. The famous memorial Well, with its pure white angel figure is very striking. It is beneath this spot that so many of the men, women, and children who were so cruelly persecuted by the brutal Nana who was leader of the rebels during the Mutiny in 1857, were buried, and many of them were still alive when they were mercilessly thrown into this well after having undergone terrible sufferings. I have not time to go into the story of the heroic conduct of so many of our fellow countrymen and women during this terrible time,

but this monument stands as a fitting expression of the feeling of pity and reverence which seems to pervade the place.

From Cawnpore we went to Lucknow, where stand the ruins of the famous Residency, which was the scene of many a heroic deed during the siege of 1857. The Mutiny, which was a rising of a certain portion of the native part of the Indian Army, was not joined in by the people as a whole at all. Sir Henry Lawrence was at the head of the army at Lucknow, and when he saw that a siege was imminent he made what preparations he could, but he believed they could not hold out against the rebels for more than a fortnight; but at the cost of great privation and suffering, and many deaths notably that of the brave Sir Henry Lawrence, the noble little garrison held it for more than 12 weeks." "Hold it for 15 days? We have held for 87," so runs Rudyard Kipling's Ballad.

The Residency buildings stand now peacefully enough in the beautiful garden which surrounds them, and which abounds in flowering trees and bushes and well-kept lawns, but their ruined appearance bears eloquent testimony to the severity of the siege "And ever upon the topmost roof our banner of England blew."

We were shown the room, now roofless, in which Sir Henry Lawrence received his death wound, and in the graveyard hard by is a simple stone with the inscription: "Here lies Henry Lawrence, who tried to do his duty. May the Lord have mercy on his soul. Born 28th June 1806, Died 4th July 1857."

It has been said that no one ever ate at Sir Henry Lawrence's table without learning to think more kindly of the natives.

During our visit to Agra we were all among the magnificent Forts and Palaces, &c., built by Akbar and Shah Jehan. The Taj Mahal is said to be the loveliest building of the world. It was built at the beginning of the 17th century by the Emperor Shah Jehan in memory of the great love he bore to his wife Arjamund Banu Begum, called Mumtaz-i-Mah or Exalted one of the Palace. "In all the world no queen had ever such a monument." It is indeed a marvellous piece of work. It took about 20 years to build and there were 20,000 workmen employed upon it all the time, though I am afraid it was forced labour for which the men were poorly paid in rations of corn every day. They received no money. The beauty of the whole grows upon you as you look at it, standing there in its stainless purity against the glorious blue of the clear eastern sky. We

saw it to perfection not by moonlight, but immediately after sunset when, for a few brief moments, a lovely soft ethereal pink glow suffused the dome, but I cannot describe in words the beauty of the whole scene. The broad avenue of dark Cypresses and Tamarind trees seems to enhance the glorious purity and brilliance of the building, yet, as Edwin Arnold says: "If the Taj rose amid the sands of a dreary desert the lovely edifice would beautify the waste, and turn it into a tender parable of the desolation of death, and the power of love, which is stronger than death."

Every detail of the work is carefully and beautifully executed, and the lovely coloured inlaid work over the door relieves the dazzling whiteness to perfection. Sentences from the Koran inlaid with Black marble, border the doorways and we were told that the whole of the Koran was inscribed in this way on different parts of the building and gateways.

We saw gay throngs of native sightseers crossing the threshold of the entrance to the tomb in their picturesque coloured chudders which looked brilliant against the white marble background. The women tried not to show their faces more than they could help, though curiosity made one of them turn round to look at us. A carved marble dado bordered with coloured inlaid work runs round the entrance hall.

The panels of the dado are all covered with different floral designs, carved in bas relief, the border being inlaid with coloured stones. The carving inside the building is even more remarkable than that outside. The tombs of the Emperor and his wife are enclosed within a beautiful open work marble screen, each panel of which has been carved out of a solid piece of marble. The border is inlaid with jasper, coral, bloodstone, lapis lazuli, naere, onyx, turquoise, sardonyx, and other precious gems, and the effect is marvellously beautiful. It has been said that "A single note sung beneath the dome causes a most beautiful echo which sounds from the roof like an organ or a choir of angels," and our guide gave us a good illustration of the truth of this statement.

The fort at Agra speaks eloquently of the decayed grandeur and magnificence of the Moghul Empire. Beautiful white marble Palaces and Mosques stand empty and to a great extent shorn of their richly coloured ornamentations, though Lord Curzon has had parts of them restored, and these give one an idea of what the whole must have been like. Akbar's Tomb at

Secundra, near Agra, is another of the numerous instances of the extraordinary love of the Indians for costly and lovely monuments. Most of the coloured inlaid designs on these buildings are the work of Persian artists.

As we drove along the road to Futtehpur Sikri, which is about 22 miles from Agra, we passed quite near to one of the Buffalo Wells which are, so frequently, used for irrigation purposes in India. They are worked in this way: A rope passes over a pulley at the top of an inclined plane immediately above the well, and as the animal walks down the slope it is pulling the skin full of water up from the well and after the Coolie has emptied the water into the channel intended for it, he utters a cry which is a signal to the men who guides the buffaloes, to turn them round and walk them back up the hill, and in so doing the skin falls into the water again, "and so day long this work continues in this parched and thirsty land."

Futtehpur Sikri is unlike any other city in the world. It was built by Akbar in commemoration of the birth of his son Jehangir and it was occupied by him and his court and many of his people for a few years, and then it was suddenly and mysteriously deserted.

The numerous and costly Palaces and Temples and Mosques are surrounded by deserted streets and highways. The only reasonable explanation seems to be that the site was found to be unhealthy. A certain holy man or hermit, called Salim Chisti, lived near there in a cave, and he was believed by Akbar to have been instrumental in bringing about the birth of his long-looked-for son, and it was to celebrate this event that he built this wonderful deserted city, and a small white marble mosque which stands in the Courtyard of the large mosque contains the Tomb of Salim Chisti, one of whose descendants acted as our guide. It is curious to see the little scraps of coloured braid and ribbons tied on to the gate, each of which is put there by some mother who longs for a son and who hopes thereby to gain her desire.

Perhaps the most interesting building in the place is the one where the great Akbar held his Councils during the occupation of Futtehpur Sikri. The plan of the interior is unique. It is all one storey, and in the centre there is a column of stone which reaches up a good height from the ground, and on the top of this column there is a sort of pulpit with 4 stone causeways leading from it to each of the 4 corners, and in each

corner was a seat where Akbar used to place representatives of 4 different religions, and he himself sat in the centre to keep the peace while his disputants had their say, and it was in this wise that he evolved a new religion which embraced those parts of each of the different religious systems which were most acceptable or least objectionable to the others, so strong was his desire to weld his people together under one common religion.

I am afraid it is needless to say that this universal religion had few converts and practically died with its founder. It was, however, a splendid instance of the breadth of Akbar's mind, and was characteristic of his great desire to bring peace into a land which was too much given up to petty wars and squabbles. Futtchpur Sikri is nearly all built of red sandstone, which was Akbar's favourite building material, while his grandson, Shah Jehan, preferred to use white marble.

At Delhi we saw more beautiful examples of what India owes in the way of lovely marble creations to Shah Jehan. The courtyard of the Moti Musjid, or Pearl Mosque, is surrounded by high white marble walls, which are decorated with bas relief carving in exquisite designs, and the Fort at Delhi is as full of lovely deserted Palaces as the one at Agra. The streets in the native part of the town seemed particularly busy and crowded, and the large mosque in the centre of the town stands serenely above all the turmoil. From Delhi we went to Simla, which is about 7,000 feet above sea level, and for 3,000 feet of that distance we were conveyed in a Tonga or little pony cart along a road which winds up round projecting rocks and often close to steep precipices. The driver kept the ponies going at a cantering pace all the time, and we had never been so much jolted in our lives before, for every movement of the ponies jolts the car. The ponies were changed every 3 miles, but the passengers remained the same! There is, however, a railway all the way now from Kalka at the foot of the hills to Simla, a distance of 57 miles, but we chose to drive the last half of the way in order to have the experience of a Tonga ride, and it was one never to be forgotten.

The grandeur of the scenery which surrounds this famous hill station is difficult to describe. The long line of snow-clad Himalayas can be seen in the distance, and the nearer mountains, which are all deeply escarped and entirely devoid of

vegetation, are on a very much larger scale than any in our country.

There are many different types of faces to be seen in Simla, but it is chiefly frequented by hill tribes of sturdy growth, with thick lips, and hair growing down to their shoulders.

The Mall, which is the main street of Simla, runs along the top of the ridge upon which the town is situated, and as we were starting off for an expedition to Mashobra, one day, we came upon this curious scene along this main street. Many hundreds of Mohammedans were holding a prayer meeting out of doors, and it was an impressive sight. All were silently praying together, and then at a word from the Mullah, who stood at the head, the whole multitude swayed to a bending position as one man.

After silently praying in this position for a few minutes, they all at one and the same moment moved to a kneeling position, touching the ground with their foreheads.

Each one had his little prayer mat to kneel upon, and one felt it to be an attitude of humility and reverence which it might be good to adopt in the spirit if not in the letter.

We went back to Delhi by train all the way. The line winds round dizzy precipices and overlooks gigantic ravines on its wonderfully engineered way down to the plains. From Delhi we went south to Jaipur, which is one of the few remaining Indian states still governed by a native Maharajah, though of course it is now under the supremacy of the British crown.

The city of Jaipur is comparatively modern, having been built in 1728, and it is peopled by the inhabitants of the ancient city of Amber, which now lies deserted among its hills, a few miles away. The streets of Jaipur are broad and a long facade made of perforated crushed strawberry coloured plaster and decorated with a white stencil design, runs the whole length of the street over the shops, though of course there are breaks in it occasionally. It is a cheerful-looking city and the streets are full of life and gaiety and business, and as one passes by one sees women seated on the pavement and patiently turning a handmill for grinding corn and men sifting flour, etc., etc.

On one occasion we passed a woman sitting on her front doorstep and dabbing spots of gold or silver on some coloured cotton which will afterwards be used as a chudder in which the Indian women drape themselves. She had just finished one which we saw being dried in the sun.

It is quite a common thing to see elephants marching through the streets of Jaipur, going on some errand for the Maharajah, for he has 25 of them in his stables and they want exercise sometimes. The driver sits almost on the top of the elephant's head and progues it with a sort of blunt-pointed dagger to guide it.

We had occasion to ride elephants on our way to Amber, but I should not care to ride one for more than a mile or two, for besides being a very slow manner of progress, it feels as if there were small earthquakes going on underneath you all the time!

One day we walked up Galta Hill, which lies just outside Jaipur. When we got to the top of the hill we were suddenly confronted by a crowd of long-tailed and white-whiskered monkeys. When we got nearer to these half wild creatures they came all around us, knowing evidently that we should have our pockets full of grain. They were quite uncomfortably humanlike in their ways sometimes. They are pale-gray in colour and their black faces show up well between their white whiskers. If we stared at them straight in the face their expression at once became menacing and they looked ready to spring upon us, but if we avoided fixing them with our eyes they did not resent our near approach.

Sometimes a sudden quarrel arose, and the mouths of the combatants were filled with angry sounds and their legs carried them headlong down the hill. We saw many of the mother monkeys jumping along up the hillside with their little ones clinging to them underneath and scarcely hindering their progress.

We next visited Udaipur on our way to Bombay. It is the capital of Mewar, another native state, and belongs to the family of Rajputs who boast that they can trace their descent from the sun itself. The city is beautifully situated on the shores of a lake which is encircled by hills. The Palace, which is built upon a hill and seems to tower above the rest of the town, is an immense congregation of dazzlingly white buildings. The outer walls on the lake side descend sheer into the water. We were taken nearly all over the Palace, and from the roof we had a beautiful view of the lake and its water palaces, which are built on small islands, and which are quite a feature of the Udaipur Lake. The Maharajah spends the hottest part of the year in one or other of these palaces, the courtyard gardens of

which are very pretty with their mixture of cool marble and water and lovely green plants and palms, but many of the rooms inside seemed to us more like prisons than anything else, so dark and windowless are they.

The town of Udaipur is very ancient, and is surrounded by a stout-bastioned wall, and directly you pass inside you seem to be in a little eastern world which, as yet, has hardly received the impress of anything new or western, only that you learn that the majority of the cotton saris worn by the natives have been woven in or near Manchester. The streets are made up of irregular-shaped and often ancient-looking houses, and many of the houses which, to our thinking, would be unfit for human habitation, are decorated with pictures of galloping elephants with chains hanging from their feet, evidently in illustration of some old legend.

In every Indian city there are numbers of sacred bulls and buffaloes to be seen roaming about the streets at their own sweet will, none daring to interfere with them. They help themselves to food off any counter that suits their fancy without let or hindrance, so much are they feared and revered. There is every reason why the Hindus should regard their cattle with extraordinary veneration, for oxen, and cows, are so absolutely necessary to them that one may safely say that it would be quite impossible for them to exist without their help.

They have access to some of the Temples as much and sometimes more than human beings, for we saw a notice in Benares, at the entrance gate of one of the Temples: "Hindu Gentlemen not allowed to enter here," and as we were standing and reading it, a great cow brushed past us, and walked in.

The streets always seem to be full of natives, and whenever we ventured to get out and walk they collected in crowds to watch us, as though they had never seen any white people walking in their streets before.

The men and boys nearly all wear bright coloured turbans, which show off their dark complexions well. The cloth used for these head-dresses is 2 feet wide and often as much as 20 yards in length. The uniformly neat appearance of these Turbans speaks much for the dexterity of the fingers of the wearers.

The great Hindu Temple at Udaipur is said to be a perfect example of Indo-Aryan architecture, every part is carved with so much precision and delicacy.

There are sure to be worshippers approaching the shrine

with their offerings, at all hours of the day. The interiors of these Temples are not large and spacious, nor are they adapted in any way to the use of congregations of worshippers, for no services, as we understand them, are held there.

The shrine is more or less hidden in darkness, and I will just close with a short description which I read the other day of these Temple interiors, which are so characteristic of India. It is a curious scene, the darkness, the rich colours, the wailing voices, the tinkling strings, the heavy scents of jasmine and marigold, the sheet soiled and strewn with the poor offerings, the reverence, the indifference, the splendour and the squalor, India in concentrated essence.



Annual Meeting of the Society, 1908.

The Twenty-Third Annual Meeting of the Society was held in the Lord Mayor's Parlour, Town Hall, on Thursday, June 18th, 1908, at 2-30 p.m.

The Rt. Hon. the Lord Mayor (Mr. Alderman Holt) had previously kindly consented to preside, but, owing to his attendance at the funeral of the late Lord Derby, was prevented. The Vice-Chancellor of the Victoria University (Dr. Hopkinson) presided in his place.

The following were present :—Mrs. Barningham, Miss Crowther, Mrs. Fairhurst, Mrs. H. Sowerbutts and Miss Leech; The Very Revd. the Dean of Manchester (Bishop Welldon), Mr. H. Woolley, F.R.G.S., Messrs. C. A. Clarke, G. Ginger, N. Kolp, J. McFarlane, M.A., T. C. Middleton, J.P., F. S. Oppenheim, G. Pearson, J. Howard Reed, F.R.G.S., J. Stephenson Reid, G. I. Blake, Councillor Butterworth, J.P., A. Goodwin, R. E. Hailwood, W. Harper, W. Hawkins, W. Jackson, A. W. Longden, J. W. O'Leary, C. E. Reade, A. C. Russell, T. W. Sowerbutts, H. Sowerbutts, M. W. Thompson, Joel Wainwright, J.P., W. H. Ward, J. J. Alley, and others.

The Vice-Chancellor moved the following resolution :—

"That the sympathy of the Members of the Manchester Geographical Society be tendered to the Countess of Derby and the members of her family in the bereavement they have sustained in the loss of the late Earl of Derby, Vice-President of this Society."

The Vice-Chancellor spoke of the late Earl's close association with Manchester and Manchester Institutions. He said, "We owe a great deal to that peculiar geniality and courtesy which marked the late Earl's dealings with all who came in contact with him, and none had a stronger sense of what was due from a man in his position, whether in national or local affairs."

Bishop Welldon, in seconding the resolution, said the last time he heard Lord Derby speak was in that room in connection with one of the charities with which he was associated. Lord Derby was Vice-President of the Manchester Geographical Society for many years, and on his return from Canada, in which his name is perpetuated by the great park at Vancouver, he gave a lecture on his experiences (see "Journal," Vol. x, p. 253). He was a great nobleman actuated by all the noble feelings of his class and family. The resolution was passed in silence.

The Minutes of the Twenty-Second Annual Meeting, held April 26th, 1907, which appeared in Part II. of Vol. XXII. of the "Journal," page 77, were taken as read.

Proofs of the following Report and Balance Sheet having been handed to each Member present, the Vice-Chancellor, with the approval of the Meeting, took them as read.

REPORT OF THE COUNCIL OF THE MANCHESTER GEOGRAPHICAL
SOCIETY FOR THE YEAR ENDING DECEMBER 31ST, 1907.

The Council are pleased to report that the operations of the Society have been again carried on during the year with success.

A reference to the Balance Sheet will show that the financial position is distinctly better than it was a year ago, although there is still room for improvement.

Meetings have been held during the Winter Session as usual, and the addresses delivered have been varied and excellent; the list of subjects which follows will give some idea of the fund of information placed at the disposal of the Society.

The Council are again much pleased and encouraged by the large attendance at the meetings, which they think shows clearly that the members approve of the arrangements that have been made. Our lecturers have frequently expressed their gratification at the crowded gatherings they have been called upon to address.

The addresses delivered and detailed in the following list cover a wide area of the World, and have been in most cases well illustrated with beautiful lantern slides.

"In York with the British Association." Mr. J. Howard Reed, F.R.G.S.

"Observations of the Effects of Glaciers in Derwent Valley, Derbyshire."

Dr. E. M. Wrench, M.V.O.

"A Cycling Tour through Connemara and the West of Ireland." Mr. J. Stephenson Reid.

"A Fortnight in Dingle." Rev. A. W. Fox, M.A.

"The Channel Islands." Mr. T. H. Coates.

"The Fjords of Norway." Mr. H. C. Martin, F.R.G.S.

"Some Views taken on Glaciers and round Mount Vesuvius." Mr. A. A. G. Tulloch.

"A Tour in the Austrian Tyrol." Rev. H. J. Rossington, M.A.

"Swiss and Italian Lakes." Rev. Fred A. Rees.

"Some Ancient Dreams of Italy in Stone and Paint." Mr. J. Reid Gray.

"Sicily." Mr. George Ginger.

"Corsica." Mr. C. B. Howdill, A.R.I.B.A.

"The Lut; The Great Desert of Persia." Mr. H. R. Sykes, M.A., F.R.G.S.

"An Exploration of the Nun Kun Mountain Group and its Glaciers, in Suru, Kashmir." Dr. W. Hunter Workman, M.A., F.R.G.S.

"Snapshots in India." Miss Margaret Dowson.

"Japan." Mr. J. Howard Reed, F.R.G.S.

"With Pen and Camera in Nigeria." Mr. R. Ernest Hope.

"Experiences in East Africa." Rt. Hon. Lord Hindlip.

"Experiences in Zanzibar and East Africa." Mr. W. P. James Fawcus.

"A Woman's Way through unknown Labrador." Mrs. Leonidas Hubbard, Junr.

"A Holiday in the Far West." Mr. John Dendy.

"The Mammoth Cave of Kentucky." Mr. F. Lambert, F.R.G.S.

"Round the 'All Red Route' with a Camera." Rev. A. D. Powell, M.A.

"The Influence of Physical Geography on the Destiny of Nations." Mr. Hilaire Belloc, M.P.

"The Relation between the Geographical Position and the Agricultural Value of Land." Dr. E. J. Russell.

Three most successful excursions were carried out during the Summer. In connection with these the cordial thanks of the Council are due to Mr. R. Hammett, Rev. G. A. Payne and Mr. R. Cobden Phillips for their able and pleasant leadership.

The "Journal" for the last half of 1906 and for the first two quarters of 1907 has been issued during the year.

The Council are pleased that the alterations in the "Journal," which have been made by the Executive Committee, have given general satisfaction to the members, many of whom have expressed themselves as much gratified by the style of the "Journal" as now issued.

It is with sincere regret that the Council have to again call attention to a serious loss of members by death. Among those whose loss we deplore may be mentioned :—

Mr. R. Armistead.
 Mr. John Benton.
 Mr. Joseph Broome, J.P.
 Mr. W. F. Brownrigg.
 Alderman Jas. Greenwood, J.P.
 Mr. J. W. Griffiths.
 Mr. John Hardman.
 Mr. J. Dilworth Harrison.
 Mr. H. M. Langley.
 Mr. G. M. Richardson.
 Mr. Frank Spence.
 Mr. H. H. Summerskill.
 Mr. W. Angelo Waddington.

Valuable additions to the Library, Map Room, and Museum have been made during the year, consisting mainly of exchanges for the "Journal" of the Society.

The Victorians have again performed useful service, chiefly by lecturing on behalf of the affiliated societies.

The Council desire to acknowledge the services of Mr. J. D. Wilde, M.A., of Highbury House School, St. Leonards-on-Sea, in kindly drawing up the sets of questions for the children, issued from time to time with the Notices to Members, and also to gratefully thank him for examining the replies which have been received.

Mr. Wilde's report will be found on page 81.

The Council are pleased to be able to remind the members that Geography has been re-instated in the Higher Civil Service Examinations, and are gratified to know that their Education Committee, in conjunction with that of the Royal Geographical Society and kindred institutions, have played some part in pressing the importance of this matter upon the Authorities.

The Council desire again to acknowledge their indebtedness to the member who undertakes to defray the expense of the special prize awarded on the results of the examinations in Geography at the Victoria University.

The Balance Sheet for the year, with the report of the Hon. Auditor, is presented herewith.

It is very gratifying to the Council that the efforts which they have been making to improve the Financial position of the Society have met with a considerable measure of success. It will be noticed that the Expenditure has been somewhat reduced, and that the Income has been considerably increased, as compared with the figures of last year. By this means the deficiency on the year has been reduced to £19. This is eminently satisfactory from the point of view of past experience. So far as can be foreseen there seems every probability of a small surplus in 1908. Such surplus can be assured if the Members will continue to help the Council by doing their best to extend the roll of members.

It should be remembered that there still remains an adverse balance of £162 to be wiped off. The Council feel that this matter should now receive the serious consideration of the members.

It is to be regretted that the response to the appeal in last year's report for further donations to the special fund has only resulted in the addition of £23, which brings up the total of the Fund to £388. It will be remembered that £600 was asked for (about one pound per member). The Council were of opinion that there would be no great difficulty in raising such a sum, if the members could only be brought to realise the needs of the Society. It is quite evident that although some of our supporters have loyally and liberally done their part, there are others who have not been touched. It is to be hoped that even now some of these will come forward with donations.

In concluding this report the Council wish to assure the members that the best interests of the Society are ever before them. They thank the general body of members for their support during the year under review, and trust that they approve the work done. The Council trust that all the members will individually do their best to extend the scope and usefulness of the Society, and would remind them that they can best do this by inducing their friends to become members.

THE REPORT OF THE HON. EXAMINER IN GEOGRAPHY.

I have once more at your request examined the answers of the candidates for your annual prizes, and have the pleasure to report the steady maintenance of the high standard of excellence which has been attained during the last six or seven years. That high standard which, at the beginning of that period was only reached by a few individuals, is now so widely spread as to be almost universal, at any rate amongst the senior candidates, and the marks will show how close the competition has now become. Projection on geometric principles is now not the exception but the rule, and as a natural consequence outlines are on the whole very correctly drawn. Judgement should now be developed in the direction of finding out what features of the map are those which the question requires to have emphasis and to the use of colour in such a way as best to attain that object. The lack of this is especially apparent in the maps

of the routes from London to Paris, which do not attempt to give any information about the nature of country traversed by each, nor the places to be passed, nor the companies whose lines would be used. A marked feature of this year's set is the uniformity of the spelling, which coincides much more closely than usual with the accepted dictionaries. Still such words as eruption and unidentified suggest that a study of Latin is not useless in an English education. Although originality in spelling is to be discouraged, the same remark does not apply to originality of composition: many of the replies, while showing a keen and intelligent interest in the passing events of the day, are too closely copied from books or other ready-made sources. Still originality should not become obscurity; there is a little difficulty in believing that in the excitement of the earthquake in Jamaica "on white man went man," though it is interesting to learn that at the same time part of the city (probably a low quarter) was "raised" to the ground. In dealing with the physical events in the south of Italy I learn that "The mountains of Vesuvius, Etna and Stromboli are responsible for the physical events," which from another source I find include the landing of St. Paul at Malta and the beginning of the liberation of Italy by Garibaldi. Only two answers were sent describing an ideal holiday: as they are rather pleasing I return them with the maps. The following is somewhat misty: "Friction was caused between the Governor and Admiral Davis, though the firing of a salute in his honour and also, that American aid was unnecessary, as the Governor was fully able to preserve order, that he saw in justification in accepting it."

The award is as follows:—

Class I (under 11).

Harry Turner	...	...	...	...	...	150 (Prize)
Arthur Wilson	...	...	...	...	...	140 (Prize)
Jack Wilson	...	...	...	...	...	140 (Prize)
Willie Hullock	...	...	...	...	...	118 (Award)
Charles Harper	...	...	...	...	...	105 (Award)

Class II (11 to 13).

Sam Sharrock	...	...	...	...	...	275 (Prize)
Arabella Pollard	...	...	...	...	...	265 (Prize)
James Broadhurst	...	...	...	...	...	265 (Prize)
Harold Bebbington	...	...	...	...	...	210 (Award)
Horace Lever	...	...	...	...	...	160 (Award)

Class III (14 to 16).

Reginald Bentley	...	...	...	...	...	288 (Prize)
Frank Hollingworth	...	...	...	...	...	287 (Prize)
Harold Bentley	...	...	...	...	...	285 (Prize)
Mary McPherson	...	...	...	...	...	280 (Prize)

Willie Neill	...	...	...	...	...	...	265 (Award)
Gladys Harris	...	...	...	...	...	...	250 (Award)
Harold Chadwick	...	...	...	...	...	...	230 (Award)
Arthur Appleton	...	...	...	...	...	...	225 (Award)
R. W. Sharrocks	...	...	...	...	...	...	200 (Award)
Gladys Beanland	...	...	...	...	...	...	180 (Award)

JAS. D. WILDE, M.A. (Oxon.),

St. Leonards-on-Sea.

LIST OF DONATIONS.

(See page 86.)

[illegible]

REVENUE ACCOUNT,
YEAR ENDING DECEMBER 31st, 1907.

Dr.	£ s. d.		Cr.	£ s. d.	
	£	s. d.		£	s. d.
To Expenses of Meetings.....	102	13 4	By Members' Subscriptions:—		
„ Journal, less Advertisements	94	18 5	Life	42	0 0
„ Rent, Gas, Water, and Insurance.....	146	6 8	Ordinary	435	8 0
„ Salaries	85	10 0	Associate	45	13 6
„ Books, Maps, Binding and Library.....	4	8 2	Societies	12	12 0
„ Sundry Expenses, Stationery, Postages, Telegrams, Carriage, Wages, Coal, &c.	106	6 5	„ Bank Interest	535	13 6
„ Commission and Expenses, New Members, and Col- lection of Subscriptions.....	14	3 7	„ Balance Deficit on Year 1907.....	0	11 4
„ Education Committee's Expenses	0	16 2		18	17 11
				<u>£555</u>	<u>2 9</u>

BALANCE SHEET, DECEMBER 31st, 1907.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Subscriptions paid in advance	61 8 6	By Subscriptions in arrear	24 9 3
„ Amounts owing to Sundry Creditors	148 10 6	„ Cash at Bank	22 7 7
„ Furnishing New Premises and Debt Fund	5 8 11	„ Cash in hand	0 12 6
		„ Cash at Bank Furnishing, &c., Fund...	5 8 11
		.. Balance deficit from 1906	28 9 0
		Add loss on year 1907	172 8 8
			18 17 11
			191 6 7
		Less amount transferred from Special Fund	28 16 11
			162 9 8
			£215 7 11

NOTE. The Furniture, Fittings, Books, Maps, &c., in the Library, Stock of *Journals*, Lanterns, and Slides (which are insured for £1,000) are not taken into account as Assets in the above Statement. There are 37 Life Members, whose subscriptions have been taken as Revenue.

February 29th, 1908.

Audited and found correct,
THEODORE GREGORY (F.C.A.),
Honorary Auditor.

Mr. F. S. Oppenheim in moving the adoption of the Report, described it as one of the best which had been presented to the Society. Not only was there an increased membership, but a marked increase in the attendance at the meetings. He said he believed the Society filled an important function in the life of the citizens of Manchester, giving them, through its lectures and excellent "Journal," a knowledge of the countries and their people to which were exported the manufactured goods of the city, a knowledge which would be of the greatest benefit. The Society in its efforts to promote the study of geography had the effect of drawing together the educational bodies of the city. He wished that in the great public schools, the classical schools, geography was looked upon as a more important subject.

Seconding the resolution, Mr. J. Howard Reed, F.R.G.S., also deprecated the study of history, ancient and modern, without the aid of maps. The Society, he said, in common with the Royal Geographical and other societies, had been hammering away at the educational authorities in order to get geography recognized as an important subject in the examination field. In Manchester they had been aided by the Vice-Chancellor of the Victoria University. It was satisfactory to know that the subject had been reinstated in the Higher Civil Service examinations, which was a step up the educational ladder so far as geography was concerned. The Balance Sheet, although not yet perfectly satisfactory, was a marked advance on previous years. He urged the members to try hard to expunge the accumulated debt, suggesting as the best way of bringing about this end, the obtaining of new members.

The resolution was supported by the Vice-Chancellor. Remarking that he hoped that the Revd. Mr. Steinthal would have been present to move the resolution, he said that even the calmest of us had some special fancy, personally he confessing to a little fanaticism in favour of geographical study. He felt there was no study more absolutely necessary in our schools than this. From the earliest stages it ought to be followed, for it was essential in order to get a right habit of mind in dealing with any subject. The study of geography helped one to get rid of sloppiness of mind and want of orderliness, and made people deal with real things instead of mere words. It also induced a habit of vivid imagination, vivid and accurate use of the imagination. There was nothing, he thought, which trains the mind of the child so much, and even the young men and older persons, as to show by means of description from pictorial representation such as maps and books of travel, what was likely to be the condition of affairs in other countries, especially when these countries were explained with absolute vividness. With this method of study, he pointed out, they were on the way to break down the barrier of space and time which in this city often hemmed them in. He spoke of geography as a subject all could follow with ever growing interest. The Resolution that the Annual Report and Balance Sheet be adopted was passed unanimously.

Mr. Wm. Harper moved, Mr. C. E. Reade seconded, and it was carried unanimously:

"That the best thanks of the Society be given to the Officers and Council for their services during the year."

Mr. G. I. Blake moved, Mr. J. W. O'Leary seconded, and it was resolved :

"That the Officers and Council be re-elected with the following alterations :—The Rt. Rev. Bishop Welldon, Dean of Manchester, to be a Vice-President ; and Messrs. J. Howard Hall, George Pearson, and Egbert Steinthal to be added to the Council."

List of Officers and Council as elected :—

President : His Royal Highness the Prince of Wales, K.G.

Vice-Presidents : The Right Hon. the Earl Egerton of Tatton ; The Right Rev. the Bishop of Salford ; The Right Rev. Bishop Welldon, Dean of Manchester ; The Right Hon. the Lord Mayor of Manchester ; His Worship the Mayor of Oldham ; His Worship the Mayor of Salford ; The Vice-Chancellor of Victoria University ; Sir W. H. Holland, Bart., M.P. ; Sir W. H. Houldsworth, Bart. ; The Hon. W. Rothschild, M.P. ; Sir C. E. Schwann, Bart., M.P. ; Sir H. F. de Trafford, Bart. ; Sir Frank Forbes Adam, C.I.E. ; Alderman Sir Bosdin T. Leech, J.P. ; Sir Joseph Leigh, J.P. ; Sir William Mather, J.P. ; Mr. Frederick Burton, J.P. ; Mr. J. F. Cheetham, M.P. ; Professor T. H. Core, M.A. ; Mr. Wm. J. Crossley, M.P. ; Prof. W. Boyd Dawkins, J.P., F.R.S. ; Alderman James Duckworth, M.P., F.R.G.S. ; Mr. J. G. Groves, D.L., J.P. ; Mr. J. S. Higham, M.P. ; Mr. E. W. Mellor, J.P., F.R.G.S., Mr. Harry Nuttall, M.P., F.R.G.S., Vice-Chairman of the Council ; Mr. S. Oppenheim, J.P. ; Mr. J. Howard Reed, F.R.G.S. ; Mr. C. P. Scott, J.P. ; Rev. S. A. Steinthal, F.R.G.S., Chairman of the Council ; Mr. Hermann Woolley, F.R.G.S. ; Mr. F. Zimmern.

Trustees : Mr. H. Nuttall, M.P., F.R.G.S. ; Mr. Sydney L. Keymer, F.R.G.S. ; Mr. E. W. Mellor, J.P., F.R.G.S.

Hon. Treasurer : Mr. David A. Little.

Honorary Secretaries : Mr. F. Zimmern ; Mr. J. Howard Reed, F.R.G.S. ; Mr. C. A. Clarke, Hon. Sec. Vic.

Council : Mr. J. E. Balmer, F.R.G.S. ; Mr. Jas. Barningham ; Mr. G. T. Bowes ; Mr. J. C. Chorlton, J.P. ; Mr. C. Collmann ; Col. H. T. Crook, J.P., V.D. ; Mr. George Ginger ; Major E. W. Greg, J.P., C.C., F.R.G.S. ; Mr. J. Howard Hall ; Mr. Councillor T. Hassall, J.P. ; Mr. N. Kolp ; Mr. J. McFarlane, M.A. ; Mr. H. C. Martin, F.R.G.S. ; Mr. T. C. Middleton, J.P. ; Mr. F. S. Oppenheim ; Mr. George Pearson ; Mr. R. C. Phillips ; Mr. J. Stephenson Reid ; Mr. T. W. Sowerbutts, A.S.A.A. ; Mr. Egbert Steinthal ; Mr. George Thomas.

Hon. Auditor : Mr. Theodore Gregory, F.C.A.

Mr. T. W. Sowerbutts moved, Mr. J. Stephenson Reid seconded, and it was unanimously resolved :

“That the best thanks of the Society be tendered to Mr. Theodore Gregory, F.C.A., for his services as Hon. Auditor, and that he be re-elected.”

It was moved by Mr. Joel Wainwright, J.P., seconded by Mr. Hermann Woolley, F.R.G.S., and resolved unanimously :

“That the best thanks of the Meeting be tendered to the Lord Mayor for the use of his parlour, and to the Vice-Chancellor for his kindness in presiding.”

The Vice-Chancellor suitably responded.

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Proceedings of the Society.

April 1st to June 30th, 1908.

The 789th Meeting of the Society was held on Tuesday, April 7th, 1908, at 7-30 p.m. In the chair, Mr. Charles A. Clarke.

The Minutes of the Meeting held on March 31st were approved.

The Chairman announced that Mr. Charles Edward Blacker had been elected an Ordinary Member.

Mr. Thomas Howard Christy read a paper on "Travelling in Brazil and a General Study of the People"; being an account of some of his experiences during his ten years' residence there.

On the proposition of Mr. J. W. O'Leary, seconded by the Chairman, it was unanimously resolved that the thanks of the Meeting be given to Mr. Christy for his interesting address.

The 790th Meeting of the Society was held on Tuesday, April 14th, 1908, at 7-30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting held on April 7th were taken as read.

The Election of Miss Isabel Moore as an Associate Member was announced.

Dr. C. E. Moss, F.R.G.S., gave an Address on "The Geographical Botany of Great Britain," the address being illustrated with many appropriate and beautiful slides.

Mr. C. A. Clarke moved, and Mr. George Ginger seconded, a cordial vote of thanks to Dr. Moss for his very interesting address and for the splendid slides with which it was so clearly illustrated, and the resolution was passed unanimously.

The 791st Meeting of the Society was held on Tuesday, April 28th, 1908, at 7-30 p.m. In the chair, Mr. Richardson Campbell.

The Minutes of the Meeting held on April 14th were taken as read. The death of Mr. Edward Goetz was mentioned by the Chairman, and a resolution expressing the sympathy of the members with the relatives of Mr. Goetz was passed unanimously.

Mr. E. W. Dann, B.A., F.R.G.S., gave a Lecture on "The Historical Geography of the Danube." The Lecture, a summary of which will appear in the next number of the Journal, was illustrated with Orographical Maps.

Mr. T. Kyle Dawson moved, Mr. Oates seconded, and it was unanimously resolved that the thanks of the Meeting be given to Mr. Dann for his very able address.

The 792nd Meeting of the Society was held in the Victoria Hall, Glossop, on Saturday, May 30th, 1908.

Mr. R. Hamnett, Hon. Secretary of the Glossop and District Antiquarian and Natural History Society, met the members at Melandra and described the various portions of the camp.

After tea, the party proceeded to the Victoria Hall, where the various objects found at Melandra have been labelled and arranged in cases. Mr. Hamnett gave a very interesting account of the contents of the cases, and how and where the different objects were found. Mr. Walter Taylor moved, Mr. W. H. Ward seconded, and it was unanimously resolved that a cordial vote of thanks be given to Mr. Hamnett for his kindness.

VISIT OF FRENCH GEOGRAPHERS TO MANCHESTER.

About 20 members of the Commercial Geographical Society of Paris, who were on a visit to England in connection with the Franco-British Exhibition, made a hurried visit to Manchester on Friday, June 19th, 1908. They were met on arrival by the Comte de Jouffroy d'Abbans, French Consul General for the West of England; M. Ch. Letel, acting French Consul in Manchester; some members of the Council of the Society with the Assistant Secretary. After lunch, in accordance with a programme prepared by the Society, visits were made to the Chief Fire Station, the Jackson St. Spinning Mill, the Royal Exchange, and the Ship Canal, permission having been kindly granted by the authorities in each case. The visit to the Fire Station gave rise to many expressions of appreciation, especially when on the sound of the alarm, the Brigade "turned out" in their smartest manner; the sight of the men sliding down the poles, the releasing of the horses, &c., evoked much applause. The opinion was expressed that the turn-out was quite equal to, if not superior than, anything any of the party had seen. Before leaving a photograph of the party was taken, and a framed copy of the photograph has been hung on the walls of the Society's rooms.

At the Ship Canal a steamer was placed at the disposal of the visitors by the Canal Officials and a good view of the docks and shipping was obtained. The vessel went as far as Barton to enable the visitors to see the wonderful piece of engineering—the Barton Aqueduct (which fortunately they were able to see turned). Surprise was expressed at the unexpectedly large area of water in the Docks, and the splendid facilities provided for dealing with the traffic were noticed with appreciation.

The thanks of the party were passed to the Chief of the Fire Station, A. W. Bramall, Esq., The Master of the Royal Exchange, Captain Williams, and their assistants for their guidance and indefatigable attention.

After leaving the docks, the visitors were received at the rooms of the Society by some members of the Council and others, and after they had inspected the Lecture Hall, Library, and Museum, they partook of light refreshments provided under the direction of Mrs. Harry Sowerbutts, in the Members' Room. M. Paul Labbé, the Secretary of the Paris Society, presented an inscribed copy of his book, describing a visit to the Island of Saghalien, for the Library, and Mr. N. Kolp thanked him on behalf of the Society.

In the evening the following members of the Council and of the Society invited the visitors to a Complimentary Dinner at the Midland Hotel; Revd. S. A. Steinthal, F.R.G.S., Messrs. H. Nuttall, M.P., E. W. Mellor, J.P., J.T. Lewis, J.P., G. Eckhard, H. C. Pingstone, R. Cobden Phillips, J. Stephenson Reid, L. Simon, and Joel Wainwright, J.P., who were unable to attend, and Mrs. and Miss de Bolivar, Councillor W. Butterworth, J.P., Messrs. J. E. Balmer, F.R.G.S., G. I. Blake, C. Collmann, T. Kyle Dawson, G. Ginger, R. E. Hailwood, N. Kolp, J. Howard Reed, F.R.G.S., E. Steinthal, H. Sowerbutts, T. W. Sowerbutts, Geo. Thomas, and H. Woolley, F.R.G.S., who were present.

The Guests were :—Comte de Jouffroy d'Abbans, Consul General, and his Secretary, M. René Brot, M. Ch. Letel, Acting French Consul. Count and Countess de St. Clair, and Mlle. de Lamménie, their daughter; M. and Mde. Labbé, M. and Mde. Gandy, Mde. Rondeau, Mlle. Baille, Dr. and Mde. Doat, M. Ghez, M. Guy, M. Levry, M. Carré, M. H. Dupin, M. C. Laurent, and M. Laurent.

After the loyal toasts had been honoured, special mention having been made of the President of the Society, Mr. Butterworth, who presided, speaking in French, proposed that of the President of the French Republic, M. Fallières. He spoke of the recent visit to London of M. Fallières and of the better understanding between the nations of which it was a symptom. After expressing his admiration of France and of the French nation, he went on to welcome the members of the "Société de Géographie Commerciale de Paris," who were present, and to say how great a pleasure it was for the Manchester Society, having in Geographical Study, a common bond with them, to welcome them to their city and strive to make their time pass pleasantly.

Count d'Abbans, in replying, said that nothing could be more welcome to people of France than words of praise coming genuinely from the lips of an Englishman, and also expressed the opinion that in commerce "Manchester beat everything and everybody."

At this point the Chairman presented a walking stick to M. Ghez in place of one broken by accident at the Fire Station. M. Ghez, in accepting the present, said he should value the stick even more than the one which it replaced.

Mr. George Thomas, speaking in French, proposed the toast of the French Society, and said that they were delighted to see what France was doing to stimulate interest in Geographical Research. Mr. Kolp also added a few words of welcome, and in reply M. Paul Labbé, a great traveller and the Secretary, said that he hoped soon to have the opportunity of welcoming the Manchester Society in France.

"Geography is the most importance science in the world" was the keynote of the enthusiastic speech of Comte de Jouffroy d'Abbans in proposing the Manchester Society. (Several present remarked that it brought back recollections of the late Secretary, Mr. Eli Sowerbutts.) He said that the Manchester Society had given a great impetus to the study throughout Great Britain. Geography, he believed, would bring about the only true realization of Socialism.

These opinions were also endorsed by Mr. J. Howard Reed, who replied

for the Society, and claimed that this Society was the second in the kingdom.

The dinner concluded with the health of the Chairman, proposed by Mr. Hermann Woolley.

The following morning some of the members, including Mr. Egbert Steinthal (to whose efforts most of the success of the visit was due), Messrs. C. A. Clarke, H. Sowerbutts, R. Emmett Hailwood, and T. W. Sowerbutts, gathered at Exchange Station to take leave of the French visitors on their departure to Liverpool. Great excitement was caused by the discovery in the "Daily Dispatch" of that morning, of a copy of the photograph taken of the party at the Fire Station on the previous day.

The 793rd Meeting of the Society was held at the Nook, Holcombe, on Saturday, June 27th, 1908.

The members were met at Holcombe Brook Station by the leader, Mr. J. Howard Hall, who was welcomed on this his first appearance at a gathering of the members since his election to the Council of the Society.

The following account of the visit has been kindly prepared by one of the party (Mr. W. H. Ward):—

"Leaving the station, we wend our way first across the fields, from whence we obtain a fine and comprehensive view of the closely-wooded slope on the right above and partly around the mill. Shortly we dip down into the shaded walk bordered on its left bank with young trees, carpeted with beautiful ferns, and edged with the evergreen rhododendron; and on its right a declivity clothed with grasses, and here and there a few bluebells, at the bottom running the brook from which this part of Holcombe takes its name. Five minutes of this pretty and unusual walk and we are in the lane. We still have the brook on our right, and we are at the end of the wooded slope—Redisher Wood it is called. Descending the lane, we cross the brook which now runs on our left. Two paths present themselves to us, the one to the right rising sharply and runs along the top of the ridge; the one to the left, by far the prettier, takes us for some distance along nearly the base of the ridge, past the ruins of a few cottages and the old mill. This scene is most picturesque of all. The cottages, partly fallen down, but now being gradually demolished; the old mill, a relic and reminder of years ago, with the elder, the ash, and numerous wildings growing over it, between it, in it; the brook, its partner in days of prosperity, meandering calmly by its side, now between steep and well-clothed banks and hidden from view, now level with the green sward, in and out over its massive-looking rock bed. Proceeding, on our left is a grass-covered slope with a few small tree growths, and below this the disused reservoir, marked only by the depression, the marshiness of the ground, and the presence of the horse-tail. Our path rises, and soon, too soon, we have to leave this delightful and much varied walk. We pass Hilton's Farm, and are on the Ridge. Away on our right is the hill of Holcombe. Covering the ground quickly—for there is little near at hand to see—we gaze at the country on the left as we walk along. On the horizon we see where runs the old Roman road—Watling Street. The Children's Home stands out prominently in the landscape. We call at the Ridge Cottage to see Mrs. Eli Sowerbutts, who seems almost overcome with our visit, and

with the recollections brought to her mind in connection with the Society. We leave her with the best of wishes for her continued health, and dipping down once more cross the brook. We rise again, and apart from the broken-down homesteads dotted here and there, remnants of the days of the hand-loom weavers, when weaving and agricultural pursuits went somewhat hand in hand, we see little but a wide expanse of hilly country. We are thus more interested in nature's beauties at our feet—a solitary and lonely harebell, the cotton grass just commencing to shed its fine silky threads, with which will come away the seeds that yearly increase this coarse, grass-like plant of the damp moors, and whose snowy heads bring to our mind's eye winter's snow, though to-day is one of the warmest and brightest of this summer; a bold patch of the distinctive ragged robin; the last of the bluebell, whose flowers for so long have provided us with those vast carpets of blue; great and bold patches of the great bistort or snake weed, sometimes a deep pink, sometimes nearly white; a stray plant of the marsh lousewort; an advance guard of the yellow rattle; the greater stitchwort in the hedge bottoms; the white bed-straw covering the closely cattle-cropped grass land; the buttercup-like tormentil; grasses innumerable; but most beautiful and most delightful of all, the forget-me-not, with its light green foliage and its enamelled blue flowers growing in the marshy ground and away from the paths of men. To our leader we are indebted for this "find." We reach our rendezvous—the grave of Roger Worthington. In 1709, the tombstone tells us, he was laid to rest in this unique burying-place, the corner of a field. If one grave can be more lonely than another, this most certainly is. No church bells resound above his last resting-place, no sounds of hymns are heard, no praise goes up. The birds and bees alone chant over him. The tombstone has been shattered, done in the act of tilling the ground some years ago. The share of the plough catching the foundation of the wall which once surrounded it, the harnessed horse was thrown heavily down on the thin slab, and hence its being broken. Now the grasses grow through it, and over its sides. Soon, if not already, the whirr of the reaper's machine will be heard close to this strange last resting-place. Near by is, it is said, the house in which he lived. It is not necessary to go into the circumstances resulting in his burial here. More than one writer has dealt as fully with it as is possible. Reverently one gazes on the grave, and leaves imbued with its spirit of loneliness, deep in thought. We now make our way to our leader's cottage, passing on the way the old house at Holcombe Hey Fold, about which—although little, if anything, is known—there is a peculiar old-time charm. Very soon we are enjoying a most appetising repast provided by our host and hostess. A brief rest afterwards on the lawn, and a slow walk to the station terminates a more than ordinarily enjoyable half-day. Hearty thanks to our leader and host, and our hostess, Mr. and Mrs. J. Howard Hall, and we entrain for Manchester."

Reviews.

"Compendio de Geografía de la República de Colombia." By Angel M. Díaz Lemos. 1 vol., pp. 207. Barcelona: Henrich and Co., \$1.50

It would not be fair to judge Professor Díaz Lemos' book by our own standards. We should think the patriotic effusions of the preface altogether out of place in an elementary text-book for schools (and the author does not claim that his work is anything else). We should consider too that 6s. is an extremely high price for such a book. But this somewhat florid style of writing is not unusual in school-books in some countries, and allowances must be made in judging the price of a book published in Spain, with its author a month's journey away. Its publication here, for instance, where a different language is spoken, would no doubt have entailed still greater delays and difficulties than those with which the author had to contend. Probably there would have been many misprints. Tredonia for Fredonia (p. 83) is the only one we noticed.

We would suggest that an alphabetical index be added to a future edition and that the excellent coloured map be put at the end of the book on a page which can be opened in such a way that the whole of it can be seen, the right way up, beyond the margin of the other pages. This is better than a loose sheet, which is apt to get lost.

Without wishing in any way to defend the action of the United States in the matter of the secession of Panama, we must say that we think Professor Díaz Lemos' tirade extremely ill-advised in a school-book. To this day, we have been told, the French school-boy is brought up to hate Germany. It is a pity to follow such a bad example. Here our complaints end. Professor Díaz Lemos has undoubtedly taken great pains with his book. It has been adopted in Colombian schools and has already reached a 6th edition. As far as we can judge, it is accurate. The subdivision of the country into 15 instead of 8 departments (as we write, we learn that a further subdivision into 34 is projected) has caused the author much extra labour and expense. We think he has some excuse for dealing with Antioquia (old style) more fully than with the other departments, for it is more important and more densely populated than any other, except Cundinamarca. Also whereas his sources of information about the remainder of the country will have been far from abundant, Dr. Uribe Angel's monumental work (perhaps the most exhaustive handbook of its kind) will have provided Professor Díaz Lemos with all the data he could possibly require.

The Colombian schoolboy knows much more geography than his English confrère, who probably does not know where Colombia is, and, what is worse, does not care. This book, it is true, contains more than the English schoolboy need be expected to know. We wish though, that he would learn a little. Then he would no longer think it bad form to try and learn more.

W. H. Z.

"Map of North America." 94.9 miles to an inch (1:6,013,500).

"Map of South America." 94 miles to an inch (1:6,000,000).

New Orographical Series of Maps, compiled under the direction of H. J. MacKinder, M.A., F.R.G.S. London: Edward Stanford. Price: Sheets, 16s.; Mounted, 20s.

It gives us great pleasure to be able to draw the attention of the Members to such specimens of Cartography as we have in these Orographical Maps, published by Edward Stanford.

They should be of great use for teachers both of Geography and History, the physical features being so clearly shown. One special characteristic of these maps is that one colour only has been used for the land and another for the sea, the variations in level being indicated by darker or lighter tint. Hill shading has been added where requisite in the more hilly districts. The inland waters are coloured blue and the courses of the great rivers are clearly shown

"The Britannic Historical Geography." Parts I. and II. London: Charles and Dible.

These books should prove of great value to students of History and Geography alike, the history notes will prove a ready help in revision, and they are made the more helpful and interesting by the many maps of the various districts and the plans of some important battles. The books are good in arrangement and, being reasonable in price, should have a ready sale.

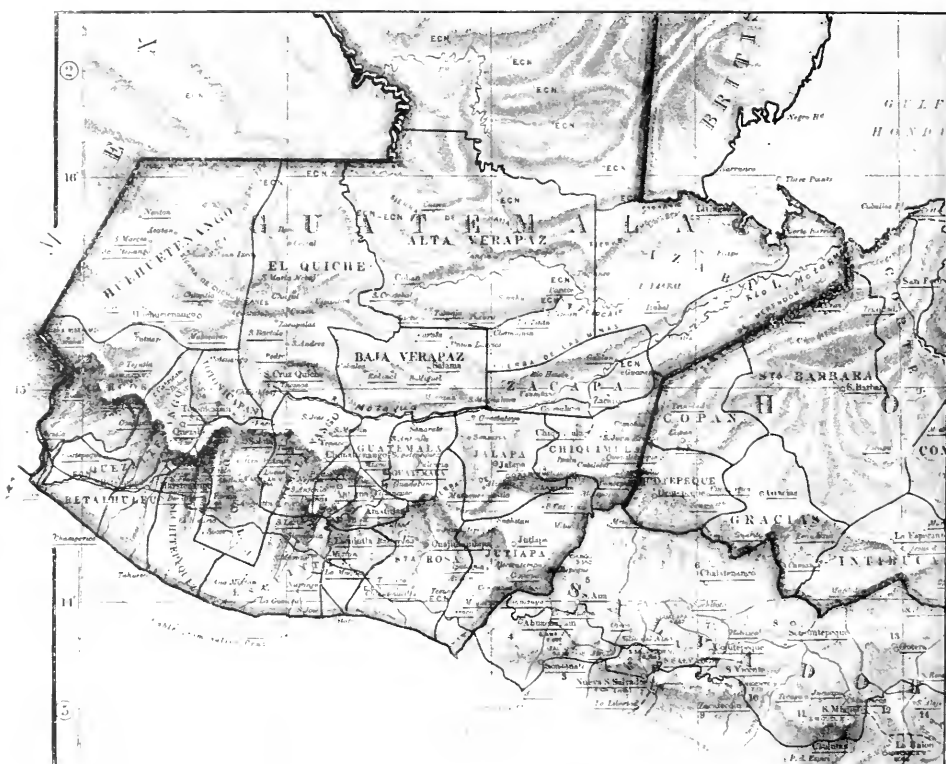
H. C. M.

"A Rational Geography." Part II. By E. Young, B.Sc. London: G. Philip and Son, Ltd., 1908.

The Introduction contains useful hints and practical suggestions; and some of the chapters are well thought out and should prove helpful to the student.

H. C. M.

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"Map of Guatemala" (reproduced, by permission, from Map 2292 of the Topographical Section, General Staff, War Office, London).

The Journal

OF THE

Manchester Geographical Society.



GUATEMALA: TRAVELS AND EXPERIENCES.

By W. S. ASCOLI, F.R.G.S.

(Addressed to the Society in the Geographical Hall on Tuesday,
December 15th, 1908.)

GUATEMALA is the most northerly of the five republics which constitute Central America and lies between 13° 42' and 17° 49' N. latitude and 88° 10' and 92° 30' W. longitude. No very accurate survey of the country has been made, and the area is variously estimated at between 48,000 and 60,000 square miles (see Map). The population numbers about 2,000,000, of which about three-quarters are Indians and the remainder descendants of Spaniards and "ladinos" or half-castes.

HISTORY.

Though playing a very small rôle in the world's history at the present day, Guatemala has filled a position of importance, inasmuch as, during the 17th and 18th centuries, she was one of Spain's finest and richest colonies. Very little is known of the country or of her inhabitants prior to the occupation by the Spaniards at the beginning of the 16th century. But that there was a fairly advanced state of civilization amongst some of the Indian tribes is evident from the specimens of architecture and stone-carving still to be found in the country and from the accounts written by those of the Indian "caciques" or chiefs whom the Conquistadores taught to read and write. Unfortunately, of the former very little remains to-day. In addition to quantities of small stone images, constantly being unearthed, the only large remains are the ruins at Copan on the Guatemala-

Honduras frontier, those of Palenque, a few miles from the Peten frontier in present-day Mexico, a number of great monoliths at Quiriguá, and a few others of less importance scattered throughout Central America. Many of these remains, notably the great monoliths at Quiriguá, are beautifully carved and are covered with strange hieroglyphics which, if deciphered, would probably give some idea of the inhabitants of the country before the arrival of the Spaniards. The accounts left by the Indian chiefs, though meagre, suffice to show that the Indians were no savages, and that they had a code of laws, rigorously put into execution, a well organised form of government, and a religion based on fire-worship and human sacrifice. Juarros states that the Indians claim descent from the Egyptians. These records also show that the chief town of the Quiché Indians, Utatlan, was a great city, well fortified, and possessed many beautiful palaces, some four stories in height. Except a few mounds, however, nothing remains of this ancient stronghold, the site of which is near the Indian town of Santa Cruz Quiché.

At the beginning of the 16th century the two powerful tribes of the Cachiquel Indians, with their capital at Tecpam, some forty miles distant from the present city of Guatemala, and the Quichés with theirs at Utatlan, not far from the town of Quezaltenango, were engaged in constant warfare. Hearing of the presence of Cortez in Mexico, the former sent ambassadors to him, stating that they were willing to recognize the king of Spain as their chief and asking him, at the same time, to send a force to occupy the country. Consequently, in December, 1523, Pedro de Alvarado, one of Cortez' captain-generals, left Mexico with some 300 Spaniards and a small army of Mexican Indians to occupy the country. They appear to have found little difficulty before reaching the plains on which Quezaltenango now stands. Here their progress was barred by a large army of Quiché Indians, said to number 70,000, all drawn from the great city of Utatlan, and it was not till several pitched battles had been fought that the hardy Spaniards succeeded in breaking through the Indian lines. At length, after many hardships, this valiant handful of adventurers reached the slopes of the Volcan de Agua. So beautiful were the surroundings and so delightful the climate that they determined to settle here, and on St. James' day, 1524, they founded the city which a few months later was named, by a decree of the Emperor

Charles V., *La Ciudad de los Caballeros de Santiago de Guatemala*. The name Guatemala is probably a corruption of *Juatimol*, then king of the Cachiqual Indians, who gave valuable aid to the Spaniards during the earlier years of the occupation.

The young town had but a short life, and its fate might have served as a warning to many other fair towns which have since shared similar fates throughout Central America. In 1541 Alvarado, who had been appointed Governor of the new Kingdom of Guatemala, as it was then called, died, and a few weeks later, on September 8th, the town was destroyed by a torrent of water descending the slopes of the *Agua* during a heavy earthquake. It is generally supposed that, previous to this date, a lake occupied the old crater and that the contents were discharged over the town by the breaking of one of the crater's lips by the earthquake.

Discouraged by the catastrophe, but yet loath to abandon the ideal surroundings, the survivors, with the consent of the Spanish Crown, commenced rebuilding the city some two miles to the north of the ruins, now known as *Ciudad Vieja*. The new town received the same ambitious name as its predecessor and enjoyed a much longer life than it. Its history, however, is a long chapter of similar disasters, for it is recorded that it was destroyed or partially destroyed no less than ten times during a period of less than 250 years. Added to this, the *Volcan de Fuego*, some ten miles from the city, must have inspired the inhabitants with constant dread, for, during the life of the town, few years passed without an outburst of the forbidding cone. In spite, however, of all these calamities, the city grew both in size and power. Towards the middle of the 18th century Guatemala was one of the richest and largest cities of America, its population numbering over 100,000. The new kingdom now extended from the Isthmus of Panama to that of Tehuantepec, divided into several provinces, but all governed from headquarters in the capital. At this period the country was one of the greatest assets of Spain, and the mother country drew largely on the treasures found there. There are still to be seen along the Caribbean coast, as at *Omoa* in Honduras and at *San Felipe* at the entrance of the *Golfo Dulce* in Guatemala, the fortresses which were built to receive these treasures from the interior of the country and protect them till the arrival of the famous armadas which were to take them across the seas to

Spain. These fortresses also played an important part in repelling the invasions of the hordes of pirates which infested the Caribbean Sea during the 18th century and were a constant menace to the mariner of those days.

The wealth of the new kingdom, the romance of discovery and the adventurous spirit of the age naturally attracted many from the mother-country. Many good and noble families, trying their fortunes in the new country, found the place so congenial and the means of amassing wealth so easy that they finally settled there and brought to their new home much of the life and spirit of their own country.

Though cruel and oppressive to a degree, there can be no doubt but that these old Spaniards were great colonisers. The power and greatness of Spain during the 16th, 17th and 18th centuries can only be attributed to the indomitable pluck, the iron will and the stern, yet practical, administration of these hardy adventurers. They cut their own roads and saw that these were efficiently protected. The archives of the city of Guatemala, still preserved, show that not only were the laws rigorously administered, but that everything possible was done for the betterment and advancement of the inhabitants. Schools of various grades were provided, a university was established, and much good work was done by the Sociedad Económica in instructing people in the arts and crafts and generally by introducing new methods.

But their fine capital was to share the fate of its predecessor, for, on July 29th, 1773, it was totally destroyed by a violent earthquake, during an eruption of the neighbouring Volcan de Fuego. So disheartened were the survivors that they decided to abandon the ruined city and commenced building their homes on the site of the present city, some twenty miles to the north of the old town, and at a greater distance from the volcanoes. The former place, however, was not entirely deserted for some of the inhabitants returned, and Antigua Guatemala, as it is now called, has a population of some 20,000 to-day. The ruins are of great beauty. Those who have entered the lovely valley on some calm summer evening and have seen stretched before them the crumbling walls and arches of many a noble church and palace, with their background of three mighty volcanoes keeping solemn guard over them, will never forget the sight. And these ruins prove that the old Spaniards grudged neither labour nor love in their work. Here

you will see the roofless aisle of a church: one graceful arch alone remains standing: the massive walls, between eight and ten feet in thickness, are cracked and rent in all directions, and, at one corner, a huge section thrown down by the earthquake lies exactly where it fell. There you will see the façade of a church, practically all that remains of the building, heavily sculptured and adorned with the images of saints. If you go into the cloisters of some of the monasteries you will probably find some overgrown fountain covered with quaintly painted tiles brought from Spain. Formerly these churches and palaces were filled with beautiful works of art, but almost all have now disappeared. A great deal of romance hovers round the dilapidated towers and walls, and many are the legends of hidden treasure, underground passages and ghostly visitants that the inhabitants will give you. But the casual visitor will be amply repaid for the long and dusty ride from the capital by the mere sight of these beautiful ruins, without trying to prove the veracity of these stories, for there have been thousands there before him and the treasures nowadays probably occupy a greater place in the imagination of the inhabitants than among the fallen walls.

But the so-called Kingdom of Guatemala was not to survive the old capital very long. At the beginning of the 19th century political unrest prevailed through the greater part of the Spanish possessions in America, and one after another the various states proclaimed their independence from the mother-country. On September 15th, 1821, Guatemala declared herself independent and commenced self-government as a republic.

Since her independence there has been little of general interest to record in her history. Continual political strife has eventually crippled one of the most richly endowed countries in the world, and before this petty strife is definitely quelled and continued peace gives assurance to her people, nothing can draw her from the mire into which she has sunk.

PHYSICAL ASPECTS.

The greater part of the country is very mountainous. The principle chain is that which runs along the Pacific coast and forms the chief watershed of the country. It is composed mainly of a series of great volcanic cones, most of which are extinct. Only one, the Santa Maria, is constantly active at the present day, but the Fuego, Pacaya, Cerro Quemado and

Atitlan have open craters and display a certain amount of activity. Without an accurate survey it would be impossible to give the number of mountains in this chain which owe their origin to volcanic agency, for, in addition to the twenty odd which bear names, there are countless small cones of which no notice is taken in the maps of the country. With the possible exception of Tajumulco, near the Mexican frontier, none of these volcanoes rise to a greater height than 14,000 feet, but their appearance, especially from the coast, is very imposing. They are all, with few exceptions, perfectly symmetrical cones, and the view of this row of giants from the Pacific, their entire heights exposed to view over the blue tropical haze which covers the coast, is one not easily forgotten.

This range of volcanoes does not actually form a chain, for it is split up into various groups, the axes of which run transversely to the principal chain, each group being separated from its neighbour by a deep ravine. In almost every case it is the most southerly (seaward) volcano of these groups which has been active most recently.

To the north of the volcanic system is a region of highlands which occupies the whole of the centre of the republic. The mean altitude is between 5,500 and 6,000 feet, but near Huehuetenango and the Mexican frontier it is considerably higher, and some of the large Indian villages in the western part of the republic are situated at nearly 10,000 feet above sea-level. These highlands gradually decrease towards the Salvador-Honduras frontier where the mean elevation is probably under 2,000 feet. This part of the country is very broken and though distances are not great, the deep ravines and intervening ridges render access to some parts of the country somewhat difficult.

Guatemala is well watered, especially on the Pacific slopes, where mountain torrents abound. There are, however, few rivers of importance, the only large ones being the Motagua, which rises in the N-W part of the country and flows into the Gulf of Honduras, and the upper reaches of the Usumacinta, which rises near the Vera Paz district and flows into the Bay of Campeche in Mexico. Neither of these rivers is used for navigation, but those engaged in the timber trade make use of them by floating mahogany logs towards the sea. The Motagua, during the rainy season, is frequently very dangerous for, draining a great part of the interior, the waters, always swift, sometimes rise suddenly as much as thirty feet in twenty-four

hours, and carry away everything in their course. Besides causing much damage by flooding in its lower reaches, it has on more than one occasion torn away the large viaduct which carries the railway from Puerto Barrios to Zacapa.

CLIMATE.

Owing to the hilly character of the country the climate is very varied. On the Pacific coast and the low-lying plains and valleys to the north of the volcanic system it is hot, but the most densely inhabited parts—the highlands—have a temperate and very agreeable climate. Generally speaking, it is healthy, though, in the low-lying parts, malaria and other tropical fevers are prevalent. There are two seasons—the dry season, which lasts from November till the middle of April, and the wet season, which holds sway during the rest of the year. Though rains fall copiously during the latter, it is a rare thing not to enjoy fine bright weather during a part of each day, and, generally during the month of August, there is a bright spell which may last for a few weeks. At the end of November north winds begin to prevail and this can be taken as a sure sign that the dry season is at hand. The wind keeps in that quarter with peculiar persistency until the end of the dry weather and, during the months of January and February, is so cold in the higher regions, where the large towns are situated, that frosts are frequent in many districts.

These weather conditions prevail throughout the greater part of the country, but, curiously enough, in spite of its small area, there are places where its conditions are so different that one might imagine oneself to be in a totally different country. For instance, the rainy season in the small belt of country lying between the towns of Zacapa and Salamá does not, generally, last longer than a month, and in consequence of this the whole countryside is so dry and parched that no vegetation can exist—with the exception of a species of cactus and a few stunted bushes—a great contrast to the superabundant and luxuriant growth of the neighbouring Atlantic coast. To the north of Salamá again, and throughout the whole of the Alta Verapaz, exactly the reverse occurs, for in that district the rainfall is so persistent that it is a common jest throughout the country to say that it rains there thirteen months in the year. Riding from Salamá to Coban, the principal town of the Alta Verapaz, a distance of some twenty-two leagues, one has full opportunity

for noticing the abruptness of the change. Crossing the arid and uncultivated valley in which Salamá lies, the traveller ascends a barren range of mountains—the Sierra de las Minas. As the summit is approached a change is noticeable, for green grass begins to grow in abundance and one soon enters thick pine-woods. Meanwhile a slight drizzle has set in and by the time the summit has been passed it is raining steadily and will continue to do so till one's destination has been reached. I know of no place where such complete contrasts of climatic conditions and of the consequent aspect of the countryside are to be found within such a short distance, for Salamá, by road, is not more than ten leagues from the summit of the range. The reason for the great rainfall in this part of the country is that the warm moisture-laden winds from the Gulf of Mexico strike a range of high mountains, the cold atmosphere of which rapidly condenses the moisture.

CÖBÁN.

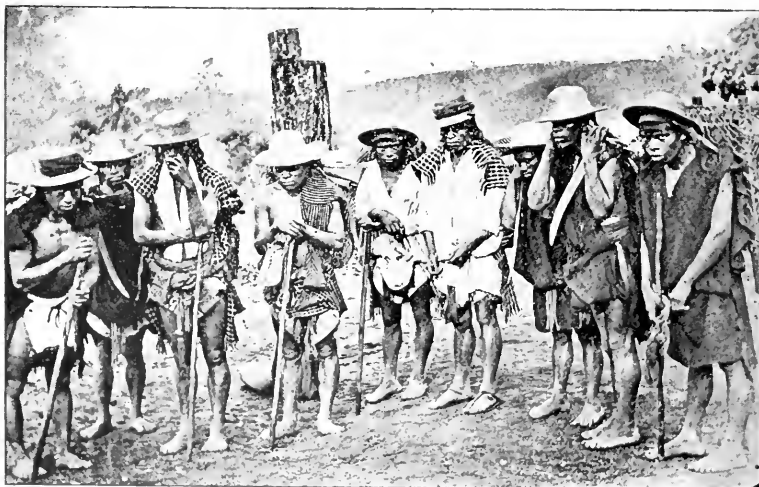
Added to the dismal monotony of persistent rain, Cöbán and the Alta Verapaz are practically cut off from the outer world. With the exception of a fairly regular postal-service to the capital maintained by runners there is practically no communication with the rest of the country. Outside communication is frequently impossible for, owing to the heavy rains, the few miles of light railway that connect Panzos and La Tinta on the Atlantic coast, are so damaged as to render traffic impossible, and the roads are at times so deep in mud as to render them useless. Everything in Cöbán is naturally very primitive and, owing to the great poverty which exists there at present, the place is totally lifeless. There is a fairly large colony of Germans in the district, occupied chiefly in the cultivation of coffee, which is one of the finest classes grown. Owing, however, to the great difficulties of transport and the dearth of labour, expenses and damages are so high that little profit is left to the grower.

PETEX.

To the north of Cöbán lies a great tract of country known as Petén, the greater part of which is practically unexplored. It occupies more than a third of the total area of the country and consists principally of immense tracts of low-lying forest. In its present undeveloped condition it is of no material benefit



Guatemala. Antigua with Volcan de Agua.



Guatemala. Indians, Lake of Atitlan.

Manchester Geographical Society



Guatemala. Quezaltenango. Earthquake of April 18th, 1902. Ruins of Hôtel Central.



Guatemala. Eruption of Santa Maria, October 24-27th, 1902. New Crater and Devastated Coffee Estate.



to the country, but with a little enterprise much could be done in exploiting these forests which contain much valuable timber, principally mahogany. The easiest way of tapping this part of the country would be from the frontier of British Honduras where, I believe, a railway is already projected for that purpose.

In the very heart of Petén is the lake of San Andres, on an island in the centre of which is the small town of Flores—lost to the outside world. The only line of communication is to Cobán, some 200 miles away, by means of a very poor bridle-path, running through the forests, and the journey occupies at least a week. Near the shores of the lake is the famous stalactite cave of Jobitzinal. This portion of the country would certainly merit closer attention from travellers for, lying within easy reach of such centres as Belize and some of the ports of the Gulf of Mexico, it is practically as unknown as the heart of Central Africa. The big-game hunter might also find a new field, for the great forests are said to teem with game, and the specimens of jaguar skins which I have seen in the district would compare favourably with those of a full-grown tiger. The neighbourhood of Cobán is also the home of that very rare and beautiful bird, the Quezal. This bird, belonging to the family of Toucans, is about the size of the ordinary green parrot. The male has a bushy crest of dark green on its head and the back and wings are covered with feathers of the most gorgeous metallic green imaginable. The breast is red, but the most beautiful feature is its sweeping tail, consisting of three feathers about two feet long and of the same scintillating greens as the back. To protect the latter, the quezal builds a nest very much resembling a lady's muff, entering at one end and coming out at the other. Indians say that the bird is so proud of these feathers that, should one of these get broken, it will kill itself by picking its breast out. The bird has been taken as the emblem of the liberty of the country and may be seen reproduced on some of the old postage-stamps. Formerly, before the arrival of the Spaniards, the Indian chiefs used the skins as head decorations. Owing to its scarcity the Government has now prohibited the slaughter of the quezal.

To show how successfully this portion of the country has resisted the advance of civilization it may be mentioned that the northern part of Petén is inhabited by a tribe of Indians, the Lacandones, who are still complete savages. They live secluded in their forest homes and never come in contact with

the other inhabitants. Even now these Indians have the reputation of being cannibals, but this may be partly due to the fact that, since the days when people found to their cost that they were such, they have rarely been molested.

CITY OF GUATEMALA.

The most densely populated parts of the country are the highlands where most of the larger towns are situated. As none of the modern towns of Guatemala present any features of great interest, it will be unnecessary to give detailed descriptions. Guatemala, the present capital, is the largest town in the republic and is situated in a broad valley some twenty-five miles distant from the volcanic chain at an elevation of 4,885 feet. The population numbers between 80 and 100,000, and is composed chiefly of ladinos or half-castes. There are also still a few of the old Spanish families and also a large colony of foreigners, among whom Germans and Americans predominate. With the exception of a few noble churches, there are no buildings of importance in the capital; the streets are wide and straight, but with the exception of the side-walks exceedingly badly paved, though of late efforts have been made to improve the surface of some of the principal thoroughfares. The capital is now connected by railways with both the Atlantic and Pacific coasts, which renders access from most parts of the world very easy. The Pacific port is San José and is about seventy-five miles distant from the capital. On the Atlantic side is Puerto Barrios, which has a deep sheltered harbour, and the distance from the capital by the new railway, only recently completed, is 194 miles. With suitable connections it is quite possible to make the journey nowadays from Liverpool in little more than a fortnight.

QUEZALTENANGO AND DISTRICT.

Quezaltenango is next in importance to the capital. It is still known as the capital of the Altos or highlands, for, in times gone by, the western part of the country formed a separate province. At present Quezaltenango has a population of some 20,000 and, though still of considerable importance, has fallen on evil days and is sadly impoverished. During the days of the coffee boom—in the early 90's—this town was the home of many of the planters whose estates are on the neigh-

bouring coast, and money was spent lavishly. The first misfortune was the collapse of the coffee market, after the boom, which ruined a great many of the planters. Then, in 1897-8, political troubles and revolutions added to its miseries. Later, in 1902, the town was entirely destroyed by a great earthquake, and, six months later, the greater part of the coffee belt, on which its existence depends, was devastated by a tremendous eruption of the neighbouring volcano, the Santa Maria. To-day Quezaltenango is a shadow of its former self, and, even if she is beginning to show her head above the ruins, it is nevertheless in the stress of great poverty. The true importance of Quezaltenango does not consist in the size of the actual town but in the fact that it is the centre of a district largely populated by Indians whose principal occupation is on the coffee estates during the season. Consequently, it will be easily understood that the fortunes of these estates largely influence the welfare of Quezaltenango.

Situated on the northern slopes of the Cerro Quemado at an altitude of almost 8,000 feet, Quezaltenango is more difficult of access than the capital. The nearest port is Champerico, on the Pacific, whence a railway leads to San Felipe—a distance of some forty-one miles. From this point a well engineered cart road, about twenty-five miles in length, leads to Quezaltenango. Owing partly to the bad surface of the road and partly to other causes it is difficult to procure carts to convey merchandise to Quezaltenango, and consequently much trouble is occasioned and considerable damage is caused to goods by having to be repacked and sent up either on mule-back or by means of Indian carriers. Owing to the poverty of the district it is not likely that any railway will be built for some time to come, especially as any such undertaking would prove very costly owing to the steep and broken nature of the ground which it would have to traverse.

Communication with the capital is now usually effected by travelling in the railway from the latter place to San Felipe and thence by the cart road just mentioned to Quezaltenango—a matter of two days. Formerly this journey had to be done entirely on horseback, through the heart of the volcanoes, a distance of some 140 miles, and, though very trying for those unaccustomed to travelling in this fashion, the beauties of the country through which one passed amply repaid one for the extra exertions.

LAKE OF ATITLAN.

Midway en route lies the lake of Atitlan, the beauties of which are unsurpassed anywhere in the world. After a ten hours' wearisome ride over broken hills and ravines the traveller suddenly reaches a spot from where its full beauties are disclosed. It will probably be evening by the time he reaches this part of the road. At his very feet, but 2,000 feet below him, lies a large sheet of deep blue water, encircled on all sides by an unbroken ring of precipitous mountains. Far away, on the other side, three great conical volcanoes stand solemn sentinels over the peaceful waters. Rising from the tropical coast great masses of black cloud encircle their summits and cast a sombre shadow over the further waters of the lake. Behind the three giants the sun has just set, but here and there through cloud-rifts a few lingering rays light up one end of the lake while the western sky takes on a blood-red hue. Such a picture of the greatest and grimdest destructive agency of Nature as that presented by these frowning volcanoes with their sombre cloud drapery cannot well be imagined. But everything in the depths below is still and peaceful: far away, on the opposite shores, the sunlight picks out in sharp relief the pigmy churches of a dozen Indian villages--each named after one of the Apostles--perched on precipitous rocks overhanging the water: nearer at hand, and at the water's edge, is the small village of Panajachel, bathed in sunshine and literally laughing in its bed of rich vegetation. But such effects as the wonderful blending of colours and the melting of light into darkness or the wonderful impressive stillness which hovers over this sequestered lake, at sunset, cannot be fitly described in words. They are part and parcel of Nature's most beautiful handiwork and defy either imitation or description. But the traveller must not stay too long for the bridle-path leading down to Panajachel is none of the best and a false step in the dark might have grave consequences.

In addition to its natural beauties, the lake of Atitlan presents many other features of remarkable interest--none more perhaps than its remarkable formation. Surrounded on three sides by high precipitous cliffs and on the fourth by the three volcanoes mentioned above, its waters, replenished by innumerable small streams, have no visible outlet, and it is surmised that these escape through cracks in the bottom. Added to this

the lake is of great depth and though plumbing experiments have been carried out, no bottom has been reached in the centre of the lake. Close in-shore, depths of 400 feet have been measured. From this and from the fact that it forms a great dip in the elevation of the surrounding country, the opinion has been formed that this lake in reality is an old crater. As its length is about twenty miles and its mean width about ten, this would mean that it is probably the largest crater in the world. Unfortunately geologists have paid little attention to Guatemala, otherwise it would be a comparatively easy matter to decide the origin of this wonderful lake.

The ride from the lake to Quezaltenango, though very interesting, is very tiring, for the distance is at least eighteen leagues, and the country through which one passes is very broken. Without taking into consideration the minor hills—which are innumerable—two immense ridges, each over 10,000 feet in height and separated by a deep valley, must be crossed. The ascent from the lake—4,000 feet above sea-level—to the top of the first ridge, is practically unbroken and lasts five hours. From the summit a descent is made into the valley of Nahualá, the bottom of which is some 6,000 feet above sea-level. This high valley is quite isolated from the rest of the country and is inhabited by a tribe of independent Indians who have practically no duties towards the State. They speak nothing but their own language and it is practically impossible for the traveller to obtain anything from them in the way of sustenance either for himself or for his beast. They are a peaceful, inoffensive people, and if left alone will harm nobody. They are industrious and everything they need in their daily life is grown and produced in their own valley. The tribe must number fully 60,000, and, with the exception of the priest, no white man lives among them. They have many curious customs, the study of which would well repay a longer visit than one usually makes.

The ascent from the valley is again very long and tedious, but from the summit a magnificent view is obtained of the great chain of volcanoes, extending from the Guatemala group to those beyond the Mexican frontier. Closer at hand a view is obtained of the broad valleys and plains of the Quezaltenango district and in a couple of hours the journey's end will be reached.

Owing to its great altitude and as protection against the

winds which are frequently very boisterous and cold. Quezaltenango is built close under the lee of the Cerro Quemado. For these reasons also, the houses are not built of wood—which is more capable of withstanding earthquake shocks—but either of stone or “adobe” (baked mud). The first impression formed on arriving at the place is its dangerous position. Entering Quezaltenango over a high pass between the Cerro Quemado and the neighbouring volcanoes, one sees the town, almost at one’s very feet, nestling only too comfortably in the lap of the great volcano. And the sight of the latter is none too inviting for the great gaping crater and the vast black masses of congealed lava literally overhang the town. From the Plaza a glimpse is caught of the Santa Maria, about three miles distant as the crow flies.

From Quezaltenango many cart-roads and bridle-paths lead to the large Indian villages scattered throughout the western Altos, but as a description of these would lead me too far afield, I shall merely enumerate the most important before I proceed to an account of the disasters which crippled this district in 1902. Huehuetenango lies some twenty-two leagues N-W of Quezaltenango and enjoys a beautiful climate. In addition to being a weaving centre and a rich agricultural district, there are several lead and silver mines, now mostly disused owing to their inaccessibility. Momostenango is a large village to the east of Quezaltenango and supplies many of the coffee-estates with “mozos” or labourers. Santa Cruz Quiché is chiefly remarkable as occupying the site of the ancient Quiché stronghold of Utatlan, almost all trace of which, however, has disappeared. Totonicapam, five leagues east of Quezaltenango, is another large Indian village where weaving is the principal occupation. I shall have occasion to revert to this place later on.

THE EARTHQUAKE.

Although Guatemala, through its situation on one of the most active volcanic centres of the earth, has always been remarkable for the number of disastrous earthquake shocks and volcanic outbreaks which have occurred within its limits, history does not record any disasters of the magnitude of those of the year 1902. Shocks are generally frequent during the changes of seasons in March and April and again in September and October, and it will be of interest to note that both of the

big disturbances occurred during these periods. But generally the shocks are slight and cause little or no damage to life and property.

The disturbances commenced apparently on January 18th, 1902, when a heavy earthquake partially destroyed the village of San Martin, a few miles from Quezaltenango and on the western slopes of the Santa Maria volcano. Between that date and April 18th no sign or warning whatsoever was given of the fearful disaster which was to follow. Quezaltenango, at that time, was a bright busy little town of some 25,000 inhabitants and, though many of the streets were very narrow, it was remarkable for the number of fine buildings it possessed, many built of stone and two stories in height. The scene in the streets on a bright sunny morning such as that which preceded the disaster was very animated, for thousands of Indians, wearing the bright costumes of their different villages, would flock into the town, some to sell produce in the market, others to buy supplies before the commencement of the rainy season. But the night of the 18th was to work a cruel change.

As I have already said, the earthquake commenced without any warning at 8.20 p.m. The first movements, though very heavy, were oscillatory and probably caused little damage. Suddenly, however, this phase—which lasted almost half a minute—was broken into by a series of tremendous vertical jolts which lasted for another thirty seconds. At the time of the shock I was reading in my room on the first floor of the house. During the first phase the ornaments began to totter and fall but when the heavy jolting began the electric light suddenly went out (due to the overturning of the plant at the generating station) and it was impossible to see the damage done. So violent were the movements in the upper story of the house that it was a matter of difficulty to keep one's balance. One does not keep a very clear recollection of what exactly happens at such moments, but I remember the fearful noise that accompanied the disaster, caused by the collapse of innumerable buildings, and the violent underground rumblings. I was almost choked by a cloud of dust caused by the falling walls. It was a matter of some difficulty to leave the room as the doors were jammed by a fallen wall, but after some minutes of suspense I was released by the stable boy. It was not till the following morning that I actually found out what a narrow escape I had had, for, entering the room then, I found that it

had been completely wrecked and a large piece of statuary from the adjoining room had been flung, through the opening caused by a fallen wall, into the very centre.

The scene outside was one of utter confusion. Owing to the darkness and the thick pall of dust under which the town lay, nothing could be seen, but the plaza, which occupies the centre of the town, was filling rapidly with a great crowd of terrified people. Gradually it began to dawn on everybody that something terrible had happened—that the town was destroyed. As the night wore on and missing people failed to put in an appearance, people began to fear that there was also a heavy death-roll. Everything during that awful night tended to increase the panic. Shortly after the first earthquake, a cry of horror rose from the throats of those collected in the square for the heavy dust-cloud was suddenly lit up in the direction of the Cerro Quemado with a lurid glare and the terrified people at once jumped to the conclusion that the volcano was in eruption. It was soon seen, however, that the glare was only the reflection of a fire which had broken out in a block of buildings on one side of the plaza, but which, owing to the stillness of the night, luckily did not spread. Added to this, shocks were incessant—it is reckoned that over 150 occurred during the twenty-four hours which succeeded the disaster—and the fear was ever present that worse might follow.

But the full magnitude of the disaster was not apparent till the following morning. I do not think that anyone who has not witnessed a catastrophe of the kind can fully realize what it means. On the evening of the 18th the sun went down on a beautiful, prosperous little town, full of the hopes of the morrow, but the morning light broke on a desolate chaos of ruins, without shape or life—the work of many years destroyed within the space of a minute. Nothing sadder can be imagined.

Not a single house escaped damage, and the great majority were completely destroyed. It is no exaggeration to say that many parts were quite unrecognizable, and it was quite impossible to find one's way among the ruins, which, in places, filled the narrow streets to almost the same height as the standing ruins.

The work of rescue began immediately, much to the credit of the town authorities. A field lazarette was erected in the plaza where the injured were attended to as soon as found, but many must have succumbed from exposure where they lay, for even



Guatemala. Interior of Crater of Santa Maria, January, 1907.
Showing hot lake and steam jet.

with the most energetic workers the progress made was slow. The death-roll was very heavy for out of a population of 25,000 more than 1,000 perished, and it was not till several weeks afterwards that all the bodies were recovered. A daily sight which was quite repulsive was the flock of vultures which settled on the ruins: in many parts, where loss of life had been great, they looked from a distance like a black carpet.

As soon as the disaster became known in the capital, the government took energetic measures to ensure the safety of the survivors. A proclamation was immediately issued in Quezaltenango that anyone found in the act of looting would be summarily shot and that any doctor leaving the town would be dealt with in like manner. The prompt execution of three or four under the first heading soon put an end to this ghoulis work.

But for three days the town was absolutely cut off from the outside world, for the telegraph wires were down all over the country and the main road from the coast, which is cut out of the side of an immense ravine, had been carried away at several points by the fall of great portions of the mountainside. As is usual after such catastrophes wild rumours were afloat in the capital that the entire population had perished, and it was not before the end of three days that they could get news of us.

In addition to the actual disaster, other dangers threatened the survivors. The worst of these was famine. Quezaltenango gets her supplies from the rich coast-country situated at the base of the volcanoes and these are brought up daily by Indians. On hearing of the disaster, these Indians, being very superstitious, thought that the "xivalvaj" or evil spirit was stalking among the ruins, and refused to come near the ill-fated town. This state of affairs grew intolerable for the few provisions which were to be had rose to such exorbitant prices that the poverty-stricken people could get nothing to eat. After a few days the authorities gave orders that a few mules and horses should be slaughtered daily and distributed in the plaza among the poorer inhabitants. This alleviated the distress somewhat till the arrival of mule trains from the capital, which brought in provisions sent by the government and very generously subscribed for throughout the country.

Much suffering was also caused by exposure for, owing to the dangerous condition of the ruins, the authorities condemned as uninhabitable almost all the houses and everybody had to sleep

out in the open air, a very dangerous practice in a place where the nights are exceedingly cold and where heavy mists fall.

During the week following this great disaster shocks were incessant, but they gradually diminished both in force and number, and towards the end of May everything was quiet again. To show how soon catastrophes of this kind are forgotten, it is sufficient to mention the fact that already in the following July re-building operations were commenced, in spite of a decree of the Government directing the town to be erected on the plains to the north and further from the volcanoes.

With the exception of a few minor shocks, nothing occurred till September 23rd when, at 2 p.m., a heavy earthquake shook the whole countryside. Being of the oscillatory type little damage was caused, but so great was the movement imparted that all the church-bells in Quezaltenango were set ringing and objects of a pendulum-like nature described fully ninety degrees of a circle. From this date to that of the eruption shocks were again frequent and as October 24th approached became incessant.

THE ERUPTION OF THE SANTA MARIA.

The eruption of the Santa Maria, which, curiously enough, escaped with the barest mention in the English press, was undoubtedly one of the greatest of modern times and commenced on October 24th, 1902. The scene of the outburst was the Santa Maria, a volcano some 12,000 feet high, at a spot some 6,000 feet above sea-level and in a direct line between the summit and the Pacific Ocean. Though volcanic disturbances had been apprehended from the violent shocks of the preceding months, and in spite of the fact that almost all the damage wrought by these shocks had occurred in the immediate neighbourhood, nobody suspected the Santa Maria. Never within the history of the country had she been in eruption, indeed the mighty forests which clothed the mountain from base to summit bore ample testimony to this fact. Moreover, some six months previous to the eruption I had occasion to climb to the summit and found there the vestiges of a small crater but neither there nor in any spot on the slopes was there any sign of activity.

The first paroxysms of this eruption lasted almost three entire days, and during that period the whole of the surrounding district was wrapped in complete darkness. So violent were the

detonations that they were clearly heard in San José de Costa Rica, fully 550 miles away, whereas, in the capital, some 100 miles away, people were terrified by the fearful noise, and houses shook as if they were about to collapse. When the atmosphere cleared a little, late in the afternoon of October 27th, it was seen that the greater part of the southern side of the mountain had been blown away and that a great crater had been formed at the base. The area of destruction was immense for all that part of the country between the volcano and the Mexican frontier, comprising some 600 square miles, was completely devastated. So great was the quantity of matter ejected and such was the violence of the outburst that ashes fell in sufficient quantities at Acapulco in Mexico, 600 miles away, to form a thin layer; on the Mexican frontier, 60 miles away, it covered the ground to a depth of thirteen to fourteen inches, and in the vicinity of the crater was over 200 feet in depth. The cloud of ejecta was witnessed by Capt. Saunders of the Pacific Mail S.S. "Newport," off that part of the coast at the time, and was measured by his instruments to attain the almost incredible height of seventeen to eighteen miles.

After several unsuccessful attempts to reach the crater, I was fortunate enough to accompany Dr. Tempest Anderson in January, 1907, on an expedition which proved to be successful, and during which we were able to make some interesting observations.* As approximately as we were able to calculate, the long axis of the crater is about $\frac{7}{8}$ of a mile and the shorter $\frac{5}{8}-\frac{3}{4}$ of a mile. The base of the crater is about 5,000 feet above sea-level and the top of the lower lip about 6,500 feet, giving a present depth of 1,500 feet. From the base of the crater to the summit, 12,000 feet above sea-level, the whole side of the mountain was blown away, leaving an almost vertical cliff exposed, about 7,000 feet in height. Practically the whole of this immense orifice was blown out during the paroxysms of the first three days.

Though space forbids an exhaustive description of this eruption, a few details, illustrating its principal features will not be out of place here.

The scene of the disaster was one of the richest coffee-zones in the country and consisted of a number of well cultivated estates. During the week preceding the eruption earthquakes had been of great frequency but were not of sufficient force

* "Geographical Journal," Vol. XXXI., No. 5.

to alarm the inhabitants. On the afternoon of Friday, October 24th, a column of steam was seen to issue from the side of the volcano in the upper reaches of the estate of San Antonio, but, though noticed by many people in the neighbourhood, so peaceful was its appearance that nobody apprehended danger. Gradually the whole countryside was enveloped in a thick pall of mist and occasional explosions became audible. Towards evening the atmosphere cleared a little and displayed the eruption, now converted into a great column of dark matter. With great rapidity this outburst increased in violence: innumerable flashes of lightning interseamed the mass of vapour, detonations followed one another with increased violence and rapidity, and small stones and sand began to fall in quantities. Those in the immediate neighbourhood at San Antonio, La Merced and San José Pazulin, terrified, escaped that night to the village of San Felipe. It was well that they did so, for later there was little opportunity. The night dragged on but no dawn broke to give hope to the terrified inhabitants of the district. Meanwhile the paroxysms of the crater increased; the incessant detonations became an unbroken roar and a deluge of sand, ashes, large blocks of pumice and fragments of stone as large as a fist filled the air. Those who had waited for day to make an escape found that task more hopeless than during the night. No land-mark was visible through the pall of darkness; all trace of roads and paths had been obliterated by the falling debris; all the bridges had been swept away. Those who tried to get away returned to their shelters terrified by the fury of the eruption. Nor were the poor people safe in their houses for it soon became evident that the weight of ash and sand collecting on the roofs would cause the buildings to collapse. The few who could do so, stationed men on the roofs, to shovel the debris off as it fell. But all efforts were of little avail for few buildings escaped destruction.

The paroxysms of the eruption reached their greatest intensity during the afternoon of Sunday the 26th, but it was not till late on Monday that the first ray of light broke through the darkness. It is impossible to describe in words the terrors and horrors of such an eruption. Beyond the terrors of darkness and the fear of imminent destruction the inhabitants of the district were fully conscious the whole time that they were trapped where they were—that there was no chance of escape. Those who groped blindly for a means of flight found their way cut

off and either returned or perished in the attempt. How great the loss of life was nobody will ever be able to tell for records of the Indians working on the estates are difficult to obtain, but that it must have been very great is apparent in the fact that preparations for the crop, which needs a great deal of additional labour, were just commencing at the time.

When the atmosphere eventually cleared, the full extent of the damage was at once apparent. In place of the luxuriant mass of vegetation and well-ordered estates was a huge desert of grey ashes and sand. Almost all sign of life between the volcano and the Mexican frontier, over an area of some 600 square miles, had disappeared during the three days. What was formerly the richest coffee-zone in the country was now an arid desert. It is calculated that something like 20,000 million tons of ashes, sand and pumice fell in Guatemalan territory alone.

Fortunately, though the crater continued in great activity for several months after the first outburst and is still fairly active, no subsequent damage was caused. Gradually as the debris was washed away by the rains, some of the estates began to pick up and the hardy coffee-bush, carefully tended, burst into leaf once more through the thick layer of ashes. I must specially mention here the estate known as Helvetia, owned by Messrs. Roesing Bros. & Co., of London, and managed by Mr. Moesly, which, lying some six miles to the south of the crater, was totally destroyed, with heavy loss of life, during the eruption. With indomitable pluck and energy and after the expenditure of enormous sums of money these gentlemen have eventually succeeded in restoring and re-organising one of the finest estates in the country—and this in the very jaws of an immense, active crater. Such energy and pluck deserve their reward.

But there are many estates, lying to the west of the crater, where the full fury of the eruption seems to have been expended and where the ashes still remain to a depth of many yards which will never rise, till in the course of time Nature once more converts her destructive elements into a rich bed of creative energy. Though disasters of this nature mean ruin to many, there can be no doubt but that the ultimate result will be beneficial for the principal constituent of the rich soil necessary for the cultivation of coffee is this very debris. The effects of the eruption already prove beyond doubt that the volcanic ejecta contains most valuable manuring properties, for the class of coffee has improved throughout the district since the disaster.

COFFEE.

From the foregoing remarks it will be seen that the most suitable places for cultivating coffee are those most exposed to the danger of eruptions—namely, the foothills of the volcanic chain on the Pacific coast, and it is here that, with very few exceptions, all the coffee is produced. The principal exception is the Verapaz district in the N-E part of the Republic where, though produced on a much smaller scale and under greater difficulties, the class grown is one of the finest in the world. Coffee is grown in Guatemala at altitudes between 1,000 and 5,000 feet above sea-level, but that grown in the higher regions is invariably of a better quality. Moreover, in low-lying districts the bush must be protected against the sun by large shade-giving trees which naturally take some of the richness from the soil whereas in the higher regions the leaf of the bush is sufficient to shade the fruit from the sun. The bushes are planted in rows and at such distances as to prevent the branches interfering with one another. As coffee very rapidly extracts the richness from the soil it is of the greatest importance that the shrubs should be constantly pruned, otherwise the soil of a coffee plantation would soon become unproductive. Flowering usually occurs three times a year—in January, March and April—and the fruit begins to ripen in the lower districts in October and relatively later as the elevation increases. This fruit very much resembles the ordinary cherry and is of a reddish colour. When ripe, it is plucked and put through a machine called a pulper, which removes the fleshy portion, leaving exposed a couple of twin beans, covered with a soft sticky substance. To remove the latter, the beans are heaped in cement tanks for some 36—48 hours, when fermentation sets in. This loosens the gum, which is removed by letting in a stream of water and constantly stirring the coffee. When quite clean the beans are laid on a cement floor or patio to the depth of about an inch and, in order that they may dry evenly, are constantly turned over with a kind of rake. About a week's hot sun is sufficient to dry the coffee thoroughly, but, in order to avoid this delay, some of the larger estates have drying machines into which hot air is pumped by means of a fan. This process lasts only 30 hours. Though not quite ready for consumption—a thin gelatinous parchment or shell still enclosing the bean—many planters ship the coffee in this state, maintaining that the final

cleaning can be more satisfactorily performed at its destination and that the delicate bean is less liable to deterioration and injury in this condition. Those who remove the shell need a special installation to which is generally added a "separator" which classifies the coffee according to size.

There are few more exhilarating sights than that of the despatch of coffee from a large estate to the nearest point of the railway, frequently a couple of days' journey away. In the early morning the muleteers collect their animals and, surrounding the pack, drive them in—sometimes over a hundred strong—galloping round with wild cries and gesticulations, but so well do they know their work that four or five men are sufficient to control as many as a hundred fresh animals and to round the whole pack up in front of the shed where the coffee is stored, without one escaping them. Then the mules are rapidly tied together and the work of loading commences. Such a babel of cursing, bad language, coarse jokes, riotous laughter and grunts from both man and beast, as each mule receives its two bags, it would be difficult to parallel anywhere. But all is good humour: even the stolid mule, blindfolded so that she cannot see the packs she is to carry, is a comical sight as she inflates her stomach in a vain attempt to avoid the secure fastening of the bags, so that she can pitch them on the ground the moment she is set loose. As soon as her packs are securely fastened the mule is turned loose to graze until all are ready: the muleteers are *quite* sure now that she will not budge until she is made to. When all is ready the muleteers mount again and with wild yells and the most indelicate language bawled at the poor animals, career round the pack and head them off in the direction which they wish them to take. Finer horsemanship, greater command of an infinite variety of abusive terms, combined at the same time with an unlimited sense of good humour, are not to be found among any other class of people. When their shouts and the merry tinkling of the mule-bells have died away, the place seems like a deserted village.

As the coffee plantations are generally far removed from the larger centres, many of the estates are perfectly self-contained—each one making a little colony by itself. In addition to the house provided for the manager or owner, there are others to shelter the clerks, engineers and overseers. Near at hand are also the office buildings, stores, machinery sheds and stables, and, a little removed, a village built to accommodate

the extra labourers needed during the gathering of the crop. In this village shops of all descriptions for the convenience of both masters and men are generally to be found. Sometimes these villages are of such size as to warrant a municipal building, an elementary school and perhaps even a gaol, where stocks are sometimes to be seen, for the punishment of light offences. Most estates also have a settled Indian population called "colonos," to each of whom is generally allotted a small piece of land, on which he may cultivate corn for his own use. These settlers form the nucleus of the labour and, in return for their plots of land and a small remuneration, attend to the estate all the year round.

Though most of the plantations are at some distance from the larger towns, it must not be supposed that those who live on them are out of touch with the world. On the contrary, in a rich productive area such as that devastated by the eruption, and many others, the whole countryside consists of a succession of adjacent estates, most of them connected with one another by cart-roads or paths which are kept in good order by the various proprietors—which is certainly not the case with roads in other parts of the country—in order to facilitate the transport of their products. These roads are generally open to all travellers and present a very lively appearance at certain times of the day, for there is always a great deal of movement both on and between the estates. Hospitality is nowhere more lavishly expended than on these estates. As most of them are in the hands of Germans it may be taken for granted that the houses are beautifully clean and that the larder is well furnished: it is a sore temptation for the weary traveller with some thirty miles before him to succumb to his pressing host with these luxuries dangled before him, instead of returning to the solitary companionship of his mule.

In Guatemala the labour question is a much more vexed question than it is amongst us. Owing to the extreme fertility of the soil and to their very few requirements, the Indians, who constitute the labour element of the country, can supply all their wants by tilling their fields for a few weeks in the year. Almost all the Indians own small plots of land on which they grow maize and black beans, which are their almost exclusive articles of diet, and should the crops be good they have absolutely no need to go to the estates to seek for work. Consequently they are forced by the authorities to work for

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Guatemala. Coffee Estate, Tumbador District.



Guatemala. Mule-train carrying Coffee. (By kind permission of
A. H. Gehrke, Esq., F.R.G.S.)



the planters and special agents are always travelling about among the large Indian villages, where, for certain considerations, the Government authorities provide them with the number of men wanted. Once on the estates, these Indians are tempted to get into debt by receiving advances of money, to such an extent generally, that it is quite impossible for them to pay it back during the harvest. This is what the planter wants, for as long as there is a sum owing in the little book which the Indian has to carry, he is bound by law to work it off. The planter, thinking of his next crop, takes care that none of them pay back all their debts. Naturally the planter sometimes gets bitten, for should the maize crop fail, he is sure to be inundated with labour which he could secure at a much lower figure, but, before everything else, he must make sure that he has sufficient hands to gather his crop. Many planters suffer great losses through these difficulties in securing labour, and frequently coffee has to be allowed to rot on the trees. The only possible solution would be to induce the Indians to live on the estates as "colonos," but they are very fond of their homes and villages in the mountains, and it is not likely that this could ever be effected. Moreover, the system of "colonos" has its drawbacks, for during a great part of the year, many would be lying idle and in time of famine it would be very expensive to keep them in food.

THE INDIANS.

These Indians in themselves are a very interesting study. There are in the country some twenty different tribes, most of them descended from the powerful and ancient tribes of the Toltecs, Mams and Aztecs. If one reads the accounts of them in the days previous to the arrival of the Spaniards, and compares them with their descendants, one is astonished at the great change in their character. If we place faith in the records of the conquerors—and we have no reason to discredit the letters which Alvarado wrote to Cortez or the detailed narratives of Jimenez and others—we see in the Quiché tribe, at least, a race of heroes, who, in spite of repeated defeats and fearful slaughter, opposed the advance of the Conquistadores till they were all but exterminated. Nowadays, they are but poor-spirited, broken beings, in all but the word slaves and without the wish or the will to better their lot. How this extraordinary change in their character has occurred it is impossible to say,

but without doubt the barbarous treatment which they received at the hands of the Spaniards during more than two centuries has largely influenced it.

Though the official language of the country is Spanish and the use of it is compulsory, the Indians, having languages of their own, naturally use them by preference. And indeed, though primary schools have been instituted in all villages of any importance, very few Indians speak Spanish well, and the great majority have only a smattering of it or none at all. In fact, in some districts, such as the Alta Verapaz, where there is a fairly large colony of foreigners, everybody has to learn the Queekchi language, for the Indians there resolutely refuse to speak Spanish.

Many tongues and dialects are used by the various tribes, several of them being apparently of totally different origin to others, but unfortunately little study has been made of any of them and consequently it is an impossibility to speak with certainty as to their origin and derivations. A close study of these languages and of the hieroglyphics which cover some of their ancient monuments would undoubtedly disclose much of interest concerning this fallen people and their past history.

The principal characteristic of the Guatemalan Indians, perhaps, is their remarkable conservatism for, though their very soul has been crushed during centuries of oppression, they still adhere to many of their old customs, and it is a matter of sheer impossibility to introduce among them any new notion or method. This trait of character is apparent in everything they do. The eager merchant; anxious to increase his business by offering the Indian something perhaps better than what he has been accustomed to buy, will learn by bitter experience that it would be much wiser to sell cheaply the same article which he has always been satisfied with and knows well. Though handlooms of a modern pattern have been introduced among the half-caste population of the larger towns, the Indian will have none of them but weaves his cloths on rude frames which bear the stamp of a much more primitive age. And scores of similar instances might be cited to show how little they have been influenced by the advance of civilization.

The Indians, speaking generally, do not live in the larger towns, but have villages of their own. Most of these are situated among the mountains and on the highlands and some of them, such as Totonicapam, Santa Cruz Quiché and Mom-

stenango, are of considerable size. Their homes consist of mud-huts, thatched with either dry grass or palm leaves, and generally a small plot of land adjoins, on which maize and beans are grown. Though most Indians are far from being models of cleanliness, yet their morals and general habits of life might serve as very useful models to the totally degenerate half-caste population, which despises and ill-treats them as if they were creatures of a considerably lower order of life. Marriage-laws are strictly adhered to, and the head of the family has a sincere affection for everything belonging to his home. To show how tenaciously the Indians cling to their homes, I shall give an instance.

Some three years after the eruption of the Santa Maria I had occasion to ride up from one of the coffee-estates to Quezaltenango through the devastated area. Arriving at San Martin, which had been completely destroyed, and where a great depth of ashes and pumice still remains, I was astounded to see that, not only had the village been rebuilt, but that each individual had dug out his old quarters and had rebuilt his hut in the hollow. It was a curious sight to see a whole village with all its huts hidden below the level of the surrounding country. What was still more remarkable was that many had commenced to replant their fields, which meant that a hole some 5 or 6 feet deep had to be dug in the ashes for each corn-stalk.

The dress of the Indians varies in almost every community and, like other details, remains uninfluenced by the advance of civilization. Their origin is not clear, for though the chroniclers say that the Conquistadores had to deal with armies of unclothed Indians, this can scarcely be correct, for, not only would the rigorous climate of these altitudes induce them to wear clothes of some sort, but there is actual evidence from their own sculptures and paintings that they were at least partly clothed. The men's clothes generally consist of pants and shirts of grey cotton, and where the climate is cold a rough woollen overall, sometimes resembling an ulster, sometimes a toga. The former are generally embroidered or have a woven pattern in red, according to the village of their origin. Their hats are made of straw, sometimes covered with pitch. The dress of the women is very varied but generally consists of an indigo cloth of varying length, wrapped round the loins and a "guipil" or loose blouse over the upper part of the body. This

guipil is generally beautifully embroidered with curious Indian patterns in many-coloured silks. That used by a bride in the San Christobal el Alto district is made entirely of white lace-work and is very heavily embroidered. Much attention is paid to the hair, which is always kept scrupulously clean and is of a glossiness that might be envied by many a cultured beauty. During festivals the hair is coiled on the top of the head in plaits, each of which is interwoven with quaint, bright-coloured ribbons with tassels of silver wire at the ends. Many of the younger women in the western part of the country are of considerable beauty, but ageing rapidly, soon lose it.

Every stitch of clothing worn by either men or women is made by themselves or by other Indians in localities where weaving forms the principal industry. These hand-made cloths are very well made and are generally of heavy texture. In some parts of the country the Indians both spin their yarns and make cloth, and it is not an unusual sight to see a woman sitting in the market-place, her basket of provisions beside her, reeling yarn from a mass of picked cotton and, next to her, another with her hand-loom fastened to a pillar, busy making cloth. They are also expert dyers, especially with indigo, and their processes invariably give better results than those employed in this country. In addition to silk, the Indians also use a violet shade of cotton yarn, known as Hilo Nicoya, for embroidering purposes. This colour is absolutely fast and is prepared from a certain snail or mollusc, found on the coast of Nicaragua.

Nowadays, practically all the Indians profess the Roman Catholic faith, and in every village is to be found a church with its officiating clergy. Whatever faith they place in their professed religion, and in spite of the great reverence they have for the priests, there can be little doubt but that, among some of the Indians, there still exists a belief in their old religion. Occasionally one hears of an Indian, in whom perhaps a spark of courage still remains, rising among his people and calling them to the mountains to practice their old religion. Such a case occurred in Totonicapam during my residence in the country, but his exhortations were soon put an end to by the wary authorities. Part of this ancient religion apparently consisted in fire-worship, for, on the summit of the Santa Maria, I found close to the old crater a rude stone altar,

in the centre of which still remained the traces of a fire, which would imply that some of them had been practising their religion quite recently. Moreover, the Indian name for the Volcan de Fuego means "Creator of All the World," which leads one to the same conclusion when one calls to mind the fact that during the volcano's very frequent eruptions the column of ejecta reflects the burning mass in the interior. A few years' residence among the Indians of Totonicapam would probably throw much more light on the subject, for in that district the Indians show more spirit than in other parts, and are known to be idolatrous.

Many curious customs are handed down among the people but, unfortunately, I have not been in close enough contact with them to speak with any authority on the subject. On one occasion, however, I was present at one of their festivals in Totonicapam, so, before closing these remarks, I should like to mention a few of the principal details. It was on the occasion of the "Fiesta de los Mejicanos de Totonicapam," which is supposed to represent the Conquest of the Quiché Indians by Alvarado. In the early morning a few Indians mount to the roof of the church, and during the whole day beat on tom-toms and blow the shrillest of reed-pipes. Then the procession advances to the Plaza, where the sham fight is to take place. At the head are four Indian kings and by their side ride four Spanish nobles, also dressed as kings. These are accompanied by a motley crowd of Indians, garbed in the most fantastic clothes and covered from head to foot with silver pieces. Some walk along quietly while others execute grotesque dances. All wear masks, some of these being of wood, very heavy and black, and apparently of great antiquity. But the most curious part of the pageant is that almost all the Indians carry, coiled round their right hands, small snakes, very venomous by nature, but with fangs extracted and, as a sign of friendship, hold them to one another's faces. I had the bad luck to know some of them, but, having undergone the ordeal once, I managed to escape into a place of safety. Once in the plaza the kings and nobles make a circle and commence reciting great speeches of which nobody understands a word, and in the intervals between these they fight one another, calmly seated on their horses and very apathetically, after which the soliloquies are resumed. This continues uninterruptedly during almost the entire day and seems to be a source of great attraction, for

many Indians from the neighbourhood, dressed in their finest clothes, flock in to witness the pantomime, and remain seated round the Plaza till everything is over. As is usual with Indian festivals, the performance culminates in an orgy which reduces the whole population to a state of incapacity for several days.

In concluding these remarks on Guatemala I wish to express my very sincere thanks to Dr. Tempest Andersen, D.Sc., J.P., F.R.G.S., of York, and to Mr. A. H. Gehrke, F.R.G.S., of London, for much valuable information given and for the friendly interest they have shown in my subject.

THE HISTORICAL GEOGRAPHY OF THE DANUBE.

By E. W. DANN, B.A., F.R.G.S.

(Résumé of Lecture delivered to the Society in the Geographical Hall on April 28, 1908.)

ALL study of Geography is unscientific and illogical if it does not start from the PHYSICAL. Even human geography depends largely, but not wholly, upon the physical. One aspect of this human geography—perhaps the most important—deals with History, and when dealing with History, it is urgently necessary to know, first of all, where peoples have lived and events have taken place, and secondly, why there. In short, *the extent to which physical features have affected the development and the movements of man constitutes Historical Geography*. In order to be quite explicit, it will be well also to exclude various studies, and to state that Historical Geography is not

1. The History of Geography, a great branch of the General subject which owes an incalculable debt to the erudition and the researches of Mr. C. R. Beazley.

2. The History of shifting political boundaries, which boundaries any chance war or treaty may temporarily obliterate. Mr. R. Lane Poole and his distinguished band of coadjutors have published a magnificent exposition of this subject in the Oxford Historical Atlas.

3. *Mere* anthropology, although some learned men, notably Professor J. L. Myres, have developed it on the Geographical side.

4. *Mere* commercial geography, which is blessed with a pretty exhaustive literature.

Nevertheless, the fabric of our subject is in part made up of fragments of all four of the above.

We study Historical Geography from physical maps of most kinds, not only orographical, but sometimes even geological and vegetation maps. For instance, the Highlands of Scotland consist in the main of a massif of Gneiss and Schist, carved by the weather into a ridge and furrow formation of considerable mean height, and supporting but little vegetation save where

the glaciers of the Ice Age left their deposit of till or boulder-clay. Population has therefore always been scanty, and the separation of valley from valley has fostered the clan system with all its excellences and defects. Poverty of soil in semi-savage times has always led to raiding and robbery, and northern Scotland has been no exception to the rule. On the other hand hard living has produced and fostered the qualities of sturdy endurance and dour determination which have been of such immense service first to Scotland and then to the United Kingdom.

Another example is provided by the vegetation of steppe lands. This is annual and not perennial, and consists of grasses and bulbous plants to the exclusion of trees. The character of the plants (more especially, for our purpose, the grasses) varies with the character of the soil and the amount of rainfall. Hence there is poor steppe and there is rich steppe. The dwellers in poor steppe are essentially nomads, and nobody needs reminding of the habits of such races as the Bedawins and the Kirghiz steppe-dwellers. Thus do the geological and the vegetation map sometimes teach us history, and even more so the rainfall map. But we must be careful not to go too far. A deficient rainfall is sometimes compensated by irrigation, and Western Australia and Egypt may be cited as examples of what man may do to assist or to counteract nature. The phenomenal period of the rise of Islam, too, breaks most scientific rules. *The geographer can only follow its topography: he cannot say much as to its philosophy.*

How are we to treat our Historical Geography? We have to bear in mind that we are dealing with three main factors, the regional, the political and the chronological. But we make the *region* the basis of our work. What is our justification? If we divide History chronologically, we are studying the development of kingdoms, of peoples, of ideas *per se*, and we are laying stress upon effect rather than upon cause. We are, indeed, just reading a narrative. Nor is the "political" method wholly satisfactory. One instance will suffice to show this. The history of Belgium (*i.e.*, Belgium as a State) is a comparatively insignificant thing: it is the history of the Franco-Belgian frontier that matters. In other words, many districts have but little History, but a very important Historical Geography. The peoples of the Near East are as nothing in comparison with their land and its place in history—the land

of Alexander and of Timurlane, the land of Moses, of Christ and of Mahomet. Political boundaries, too, are more often than not artificial. Climatology admits of transition areas: politics dare not. Hard and fast divisions are the essence of international settlements, but they seldom have a place in science.

The regional treatment is far more satisfactory than the other two because it is elastic enough to combine the good points of many others, and because it is equally helpful to the historian and the geographer. It is both logical and scientific. It is the transition from the philosophy of History to that of Geography, for Geography, properly treated, *is* a philosophy.

We now turn, by way of illustration, to the Danube. This stream has four distinct portions, the Bavarian, the Austrian, the Hungarian and the Romanian. The first part of the basin comprises the uplands connected by the Main and the Gate of Belfort with the outer world. From Regensburg (or Ratisbon) one can traverse the Franconian Jura on the way to Würzburg and Mainz; and routes lie from Belfort and Freiburg into Swabia or from Ulm and the Neckar to Mannheim. The second consists of Upper and Lower Austria, connected from east to west by the Passau gorge with Bavaria, by the Austrian Gate with Hungary, by the Moravian Gate with Bohemia and Silesia, and by the Semmering route with Venice and Lombardy. The third is the great plain of Hungary, broken by the bridge of the Bakony Wald, which the Danube pierces at the Hungarian Gate. The approaches to Hungary are difficult. The Mur-Drave and the Save come from the heart of the Alps, the Magyar Gate leads across the Carpathians from Russia, the Morava is lost in the fastnesses of the Shar Dagħ, and the Iron Gate was only made navigable by great engineering works of recent date. The fourth is the passage way from Russia to Turkey, the moat before the terrific fortress of the Balkans. Several passes lead to the Maritsa, Adrianople and Constantinople.

The History which we have to consider may be said to consist of statics and dynamics. Considering the first, we must ask, how far have physical features moulded the nature of the inhabitants? We cannot urge much with reference to Bavaria. We see here an upland people with no history of independence, unknown as a force till they joined the Germany of Bismarck. Austria has had a remarkable career, but not as a geographical

unity. The Habsburg dynasty has been the motive force. In Hungary, however, we do meet with a people who are moulded by their environment. One has only to study Magyar music to see this. The horse-loving steppe-dwellers of Hungary have produced national melodies of a very high order. The horsemanship of the Hungarians has always been world-famous. They are the children of their surroundings.

The growth of states is a very important, but not the only aspect of Historical Geography. The Danube was the northern boundary of the Roman Empire. Romania was only a temporary conquest. *German* growth was through Bavaria into Vienna. The Slavs of the German Main have become Germanised. In the 7th century the Slavs of the Alps and those of Bohemia seemed likely to join hands, but the Germans pushed between them down the Danube Valley, and the East and West Slavs were permanently divided. The Magyars themselves, a Turanian tribe, came from the Urals. Their further expansion was checked by Otto the Great on the Lech in 955. The whole of the Austro-Hungarian territories are very heterogeneous, alike as regards language, race and sympathies; and it was well said by a French minister, "Ce sont des territoires, ce n'est pas un état."

The Dynamical history was taken in detail under the following heads:—Bavaria—campaigns of Marlborough, Moreau and Napoleon. Austria-Hungary—The Turkish immigrations of 15th—17th centuries and Magyar resistance. Lower Danube—the many Russo-Turkish Wars.

List of Authorities:

Stieler's Hand Atlas—Perthes. The Oxford Historical Atlas (Lane-Poole). Encyclopædia Britannica—vol. of maps. Time-Table of Modern History (Mary Morison)—Constable. The Cambridge Modern History, vols. iv and v. The International Geography—Macmillan. The Senior Geography (Herbertson)—Oxford. The Balance of Power (Hassall)—Rivingtons. Revolutionary Europe (Morse Stephens)—Rivingtons. Modern Europe (Alison Phillips)—Rivingtons. The Ascendancy of France (Wakeman)—Rivingtons. Central Europe (Partsch)—Heinemann. The Nearer East (D. G. Hogarth)—Heinemann. Frederick the Great (Carlyle)—Chapman and Hall. Historical Geography on a Regional Basis, vol. ii (E. W. Dann)—Dent.

Proceedings of the Society.

July 1st to September 30th, 1908.

The 794th Meeting of the Society was held at Nicholls Hospital, Manchester, on Saturday, July 11th, 1908.

The Members were received in the General Dining Hall at 2.30 p.m. by Mr. J. Stephenson Reid, the Governor of the Institution, who first gave an account of the origin of the place and then described the methods adopted in carrying on the work. He said that the Institution, which entered on its beneficent labours in 1881, was founded and endowed by Mr. Benjamin Nicholls, an alderman of the City and twice Mayor, as a memorial to his only son, Mr. John Ashton Nicholls, who, after a useful public career, died in 1859 at the early age of thirty-six years. As a token of their high regard and appreciation of Mr. Ashton Nicholls' services for his fellow citizens, the working men of that day erected the granite obelisk, which for many years stood in Great Ancoats Street opposite Lever Street. Not long ago that monument was removed to Hyde Road, and it is now to be seen within the garden enclosure of the Hospital which Alderman Nicholls so generously built for the education and maintenance of poor boys in the Manchester District within five miles of Piccadilly. To be eligible for election candidates must be between the ages of 7 and 10, the sons of "Respectable Poor Persons," and must with their parent or guardian have resided for at least four years previous to date of election within the city or district aforesaid.

Whilst the founder died before the opening of the School Mrs. Nicholls did not pass away till several months after that event, and from first to last she testified her deep interest in the scheme and they were indebted to her as much as to her husband for the founding of the institution.

There were about 100 boys in the building, and as each usually remained five or six years there was an addition of about 20 each year. By means of an old boys' Association they endeavoured to keep in touch with the boys after they left.

Mr. Reid led the Members through the various rooms, giving full explanation of the various points of interest :—Dormitories, Bath Room, School Rooms, Gymnasium, Workshops, Laundry, Kitchens, Larders, &c. He drew special attention to the arrangements made to deal with fire.

The boys sang several songs, commencing with "Nicholls Hospital School Song."

These were well rendered and greatly enjoyed by the Members as also was a gymnastic display.

After an enjoyable tea in the Board Room, Mr. J. Howard Bentley, F.R.G.S., moved, and Mr. Walter Taylor seconded a very hearty vote of thanks to Mr. and Mrs. Reid for their great kindness during the afternoon, and to the Trustees for their permission, and the vote was carried with acclamation.

Mr. Reid, in replying, made the suggestion that some wealthy citizen of Manchester should follow the example of Alderman Nicholls and provide and endow a similar Institution for girls.

The 795th Meeting of the Society was held on Saturday, August 8th, 1908, at the Buckley Hall Orphanage, Rochdale. The Members, on arrival at Rochdale, took tram to Healey, and walked through the quaint group of old cottages known by the name of Healey Stones, interviewing one old lady of 75, who showed some of the party through her cottage.

On arrival at the Moor Side Fishery Company's establishment, the Manager met the party and explained the method of their proceedings, from the hatching of the eggs to the departure of the trout in lots of 1,000 at the age of two, three or four years. The party were met here by one of the Brothers from Buckley Hall, who, after the thanks of the Members had been intimated to the Manager, guided them to the Orphanage.

A very instructive and pleasant couple of hours was spent in this institution, inspecting the dormitories, workshops, schoolrooms, and playing ground and fields of the boys, and finding everything in a satisfactory condition. Before leaving the members were charmed by the playing of the Orphanage Band under the conductorship of their blind bandmaster, and very well they played.

In conclusion, on the proposition of Mr. Wm. Jackson, seconded by Mr. Walter Taylor, a hearty vote of thanks was passed to the Brothers for their great kindness in receiving the Members, to which the Brother Superior made a suitable response.

The 796th Meeting of the Society was held at Chetham's Hospital, on Saturday, September 5th, 1908.

The Members were met by the Governor (Mr. W. T. Browne) who, though greatly troubled, very kindly conducted them through the Library and the School Buildings, pointing out the many objects of interest.

Mr. Hy. Kirkpatrick, J.P., moved, Mr. Forsyth seconded a cordial vote of thanks to Mr. Browne for his kind leadership and sympathy for him in his trouble. Reference was made to the efforts being made to improve the Financial Position of the Institution, and hopes were expressed that these efforts would meet with the fullest success.

Reviews.

"A Woman's Way through Unknown Labrador," by Mrs. Hubbard, junr.
London: John Murray. Price 10/6.

The Labrador peninsula is not familiar to everyone—to many, existing in little more than name, its exact location on the face of the globe is only very vague; to some it is unknown. It is understood, of course, we are not writing of geographers. Mrs. Hubbard, junr., evidently shares this view to some extent, for she first introduces the reader to the country in general, and from the pen of one no less capable than Wm. B. Cabot. Cabot! a worthy name for a geographer to bear. A Cabot it was who discovered the North American continent in the 15th century. Another Cabot—his son—was a geographer of no mean order. *Mais reconnons à nos montons*. Twenty-eight pages there are of this preface—dealing, though necessarily in brief, with the extent of Labrador, its physical characteristics, fur bearers, Indian customs, fisher folk, missions; with the previous explorations which, though not widely known, have been extensive; touching upon the great work of Dr. Low, and the short and fateful journey of the late Mr. Hubbard, junr. Thus are we brought to Mrs. Hubbard's start into lone Labrador—a summer trip which for her has been entitled "A Woman's Way through Unknown Labrador." Most of our readers will remember, very vividly if we mistake not, her lecture "Across Lonely Labrador" which is recorded in Vol. xxiii of our JOURNAL and accompanied by an excellent map. In the opening chapters of her book we are made familiar with the early life of her late husband. We are told how, in the January of 1903, he decided on his trip to Labrador; that before the winter was over his plans were made; that on June 20th he sailed from New York with his little party—never to return, for in January following came the short message "Mr. Hubbard died October 18th in the interior of Labrador." "It seemed to me," writes Mrs. Hubbard, "fit that my husband's name should reap the fruits of the service which had cost him so much." And so has resulted this splendid addition to the knowledge of Labrador. From North-west River she started on June 27th 1905, her party consisting of four, prominent among whom was the man who had so loyally served Mr. Hubbard in 1903—Geo. Elson. A name, which while it can never figure in the list of those who have directly added to the geographical knowledge of the country, must, so long as Mrs. Hubbard's work lasts, and longer, command the admiration of all. Time and again as we read the story we realise the skill, heroism, and daring of the man. But for him, and there is no disguising the fact, Labrador's literature and knowledge would have been the poorer for some time to come. To follow Mrs. Hubbard's journey through this volume of more than 300 pages is not possible here. Nor if it were, would we attempt it; for no digest can do it justice. Coming again to

the subject of the book—the day after the start she enters the Nascaupée river. Then follows her homely description of the passage up the river, the portages, the bear trail; of the disaster to one of the canoes, which threatened defeat; of the skill and dexterity of her crew in bringing the laden canoes up against the swift and seemingly impassable current,—“climbing hills of water” she aptly terms it; and so on until she brings us to the head of the Nascaupée—“300 miles of my journey into the great silent wilderness . . . the first of the white race to trace this river to its source.” “I had,” she continues, “a strange feeling of being at the summit of the world. The country . . . seemed to fall away on every hand, but especially to north and south. The line of the horizon was unnaturally near, and there was more than the usual realising sense of the great space between the earth and sky. This was enhanced by the lifting of a far distant hill-top above the line as if in an attempt to look across the Divide.” The start is made to Ungava—from the George River, “a tiny stream stealing away from its source in Lake Hubbard, as if trying to hide in its rocky bed among the willows, to grow in force and volume in its 300-mile journey to Ungava, where it is a great river 3 miles in width.” Her journey thence, through rapids, is even more thrilling than her journey up the Nascaupée. But we must leave it entirely to our readers to peruse her narrative—for great as is what she accomplished, and valuable as are its results, all is told in a pleasing and most intelligible manner. While of great geographical value, the book is of the intensest interest to the general reader. The fine clear type merits our adding a word of thanks to the publisher. As well as this work, our library possess a copy of “The Long Labrador Trail,” by Dillon Wallace, and while it was not our intention to refer to it, we cannot pass one point which we noticed in reading cursorily through it. It is this: both the “Dillon Wallace” and the “Hubbard” expeditions set out at practically the same time—the one (the former) on the 26th, the other on the 27th of June, and from the same place, yet, singular to say, in neither book is there any mention made of this, nor of any meeting, nor of seeing each other *en route*. Was the one, we should like to know, aware of the other’s presence, and object; did they not meet or sight each other on the way? Though it may be curiosity more than aught else which prompts these questions, it would be interesting to have a ray of light thrown on them.

W. H. W.

“Australasia.” Vol. ii. Malaysia and the Pacific Archipelagoes. By F. H. H. Guillemard, M.A., M.D. Second edition. Revised by A. H. Keane, LL.D. Compendium of Geography and Travel. London: E. Stanford, 1908. Price 15/-.

This work is well produced, being well bound and printed with clear type on good paper. The maps are excellently clear, well coloured, and up-to-date, so can be recommended to Geographical teachers and others from a scholastic standpoint. The illustrations are numerous; and the subject matter throughout is full and complete in many minor details; statistics and essential points have been well handled; and the work is full of very valuable information. It is in fact a

history, a geography, and a book of travel, where one can read on and on with wrapt attention, and learn and learn as one turns over each page.

Geographical outlines are given clearly and concisely.

Physical features are dealt with in a manner which leaves nothing to be desired.

The treatment of Race and Language is a strong feature of the work, whilst racial comparisons of the native inhabitants of the various islands are interesting and instructive from an anthropological point of view.

History, Zoology, Botany, and Geology are treated with a completeness which this interesting area is worthy of: and considering the fact that only recent explorations have been made in many districts and groups of islands mentioned, the amount of matter given is highly commendable. Climate is not merely touched upon, but dealt with in much detail; and is of special interest to those desiring to settle or travel in these latitudes, as well as from a medical point of view.

The Flora and Fauna are interesting, and we have much delightful reading in this section, which will appeal to naturalists. The description of Religion, Education, Agriculture, Trade and Commerce, cannot fail to be of interest; and the statistics given must be of value to those wishful to have reliable information under these particular headings.

The life and customs of the inhabitants, governments, and their revenue, all have their place, form strong points, and bring much practical value into the work.

The Phillipine islands are the first dealt with, and occupy some 60 pages of interesting and instructive matter (after the general features of Malaysia have been touched upon in the opening chapter). The Dutch East Indies are next approached, Java having some fifty pages devoted to it; the reading of which is both educational and pleasing.

Sumatra, the westernmost of the Dutch possessions, and one of the largest islands in the world (and at the same time to my mind one of the most interesting) is the next subject, and occupies some further 60 pages of the work. The volcanic character of these islands with some vivid pictures of past and recent experiences, and its effect on the country make a strong point in the description.

Borneo comes next, with a long section and much detail. Celebes, the Moluccas, the Timor group, are treated and followed by Melanesia—the islands and groups of islands stretching from New Guinea in the west to Viti or Fiji in the east. Here we get into “The Islands” which go to make romance, and though we have much practical matter in the Physical Features, the History, Geology, Flora and Fauna, etc., it is in the account of the Papuan races, the missionary work, etc., which to my mind are the leading features of interest in this section.

Chapter XII treats of the Solomon Islands and their inhabitants, and here we find much matter in a condensed form. The Santa Cruz Islands, The New Hebrides, New Caledonia, and the Loyalty Islands, all have a place, but lack the fulness of description of the earlier chapters; though there is much information given in a few pages.

The British colony of Fiji follows, and is well treated; though in a work like this it would be impossible to enlarge on items of romance such as cling

round these islands—from a traveller's point of view. Yet there is much of interest, combined with reliable information, which must appeal to those interested in the colony from commercial and other aspects.

Under Polynesia come the Friendly islands, Samoa, or Navigator group, Ellice island, Cook's Archipelago. The Society island, The Austral, Pitcairn, The Marquesas, Easter, and Sandwich islands are only lightly touched upon. Some of these islands are so full of interest, that any minute descriptions would go far to fill a volume twice the size of the present work, and space prohibits any lengthy descriptions in detail; so for full information concerning them, combined with island romance, we must look elsewhere. But reliable data and much information are pithily put. The work concludes with a few remarks on Mikronesia or the Gilberts, the Marshall islands, the Caroline group, the Pelew and Ladrone islands.

The maps, as I have before remarked, are a very strong feature of the book, which is in my opinion, as an old traveller in Australasia and "the islands," worthy of a place in any library. It is certainly one of the most comprehensive I have seen on the subject and may be classed as a scientific work of no mean order.

T. F. S.

"Map of Australasia," 85 miles to an inch (1 : 5,385,600).

New Orographical Series of Maps, compiled under the direction of H. J. Mackinder, M.A., F.R.G.S. London : E. Stanford, 1908. Price : Sheets, 16/-; Mounted, 20/-.

The issue of this Map provides another opportunity to bring this series of Physical Maps to the notice of the Members. The name of the compiler is a sufficient recommendation, especially to teachers, that the Map will be satisfactory. The main special characteristic is that one colour has been used for the land and another for the sea, the variations in level being indicated by darker or lighter tint; hill shading has been added in a few instances. The rivers and other inland waters are shown in blue, and so stand out clearly. The names and political divisions are given in grey, and so do not interfere unduly with the physical aspect. A political map of the same region can be hung by the side of this to show these features more clearly, or the names and political outlines of the district under special consideration might be drawn on transparent paper, and, when required, superimposed on this physical map.

The Journal

OF THE

Manchester Geographical Society.



THE JUNGFRAU AND ITS RAILWAY.

By F. OEDERLIN, Mech. Eng.

(Read before the Society in the Geographical Hall on Tuesday, October 20th, 1908. Illustrated by lantern views of the Bernese Oberland.)

It is very rarely that an undertaking attracts such great interest throughout the civilised world as the construction of the railway to the summit of the Jungfrau, 13,664 feet above sea level.

It is already half finished, and, like a powerful magnet, is drawing people from all parts of the world. My intention is to treat this subject from a not too technical standpoint but to show you by words and lantern slides what such an undertaking means in its construction. I want also to show you the benefit to the general public who will be able to see and enjoy the beauties of the mountains which have been up till now the privilege of mountaineers. I may perhaps also be able to recall to many of you recollections of the Bernese Oberland and to give those who have not seen it an idea of what they might expect if they were to go there.

The credit of founding and floating the Jungfrau Railway falls to Mr. Guyer-Zeller (died April 3rd, 1903). He was a man of extraordinary intellect and energy and had a great influence on the development of Swiss railways.

In the autumn of 1893 Mr. Guyer-Zeller stayed in Mürren and when descending from a mountain called the Schilthorn, which is just opposite the Jungfrau, he saw before him the wonderful chain of mountains of the Bernese Oberland in the rays of the sun and the clear mountain air. In the near distance, separated only by the narrow but deep valley of the White Lütschine, the Jungfrau seems to be so near as if it could almost be reached. Involuntarily Mr. Guyer thought of the three projects for a Jungfrau Railway which then appeared to have been forgotten by the general public.

Vol. XXIV. Part 4, 1908.

Two of the three projects were intended to be partly wire rope railways consisting of independent sections, and partly on the rack system as used on Pilatus and Rigi, the whole line leading through a continuous tunnel about $3\frac{1}{2}$ miles in length.

The third project was originated by the builder of the Pilatus Railway. He suggested two continuous iron tubes 3 yards in diameter and 4 miles in length. The vertical rise was 11,000 feet. Inside these tubes a railway carriage of circular section was suggested, guided by rails and wheels. This carriage was to fit air tight in the tube so that it could be driven up and down the tubes by compressed air like a piston, exactly on the same principle as the pneumatic tube post. By such a pneumatic railway the journey to the summit would have been done in fifteen minutes. The essential point in these three projects was that the starting point for all was to be at the bottom of the valley of Lauterbrunnen.

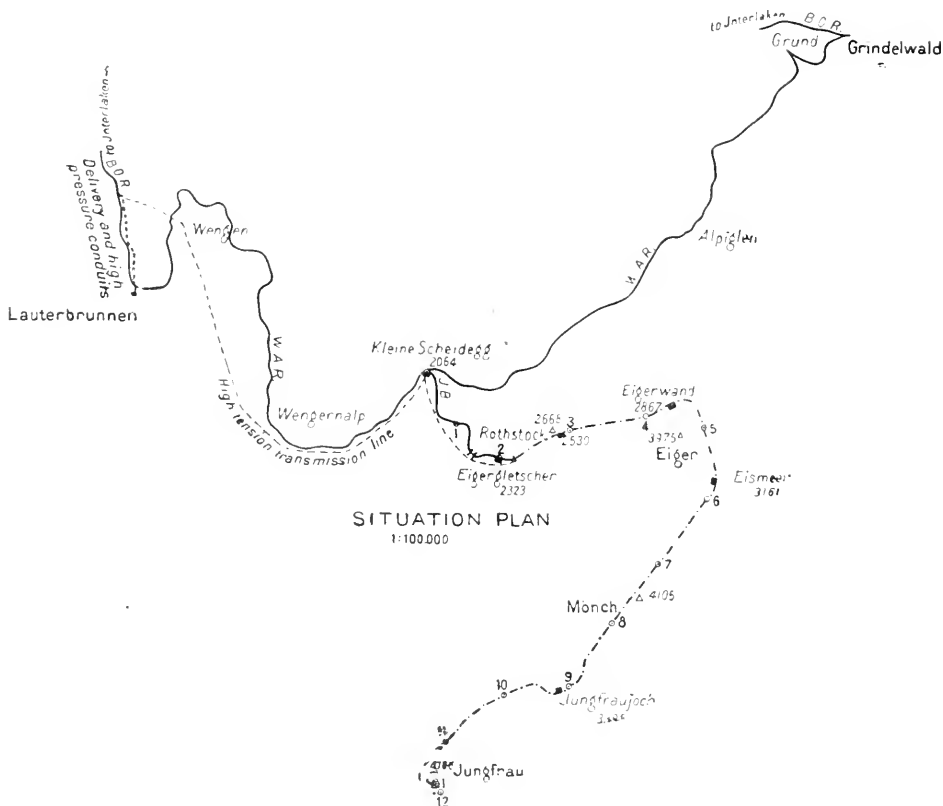




FIG. 1. Eiger, Mönch and Jungfrau from the North.

As Mr. Guyer's glance passed over the Eiger and the Kleine Scheidegg he observed a train on the Wengernalp Railway which connects Lauterbrunnen with Grindelwald via Kleine Scheidegg. He at once recognised that the line for a future Jungfrau Railway should not start from the bottom of the valley but from the highest point on the recently built Wengernalp Railway which is the Kleine Scheidegg station 6,770 feet high. The total rise of a Jungfrau Railway would be thus reduced by about 4,100 feet when compared with the previous projects.

The concession to construct a railway to the summit of the Jungfrau was granted to Mr. Guyer in December, 1894, by the Swiss federal assembly, and it contained a stipulation that he should first give satisfactory proof that the conveyance of passengers to an altitude of over 9,800 feet could be accomplished without risk to life or health. For this purpose Mr. Guyer formed a scientific committee consisting of the most prominent authorities in physiology, geology and aeronautics. These experts, after studying the matter quite independently, arrived at the same conclusion, namely, that a short stay at an altitude of 13,700 feet is in no way detrimental to the organism of a healthy person provided the ascent is made without great bodily exertion.

The Swiss council, basing its decision on the testimony of the commission, declared itself satisfied that the stipulation had been fulfilled.

The starting point of the Jungfrau Railway is the Kleine Scheidegg. The line leads first to the Eigergletscher. This portion of the line with the exception of a short tunnel 87 yards in length is in the open and runs along the top of the pass offering a beautiful view of the surroundings. The first station, Eigergletscher, is 7,620 feet above sea level. This is the real base for the construction of the Jungfrau Railway and quite a little colony has sprung up there. There are workshops, warehouses, stores and offices. The engineers and workmen employed in the construction and maintenance of the tunnel number about 150 and live here all the year round. The houses have been built to suit the peculiar climatic conditions met with at this altitude and are lighted and heated by electricity. There is a complete bakery for supplying 150 people. There is no water here in winter as every drop is frozen between November and May and it can only be obtained by an electrical

melting process. All the food for the men and engineers and the material for construction have to be transported to this station during summer, as in winter there is no railway connection from the Grindelwald valley. This is impossible on account of the great danger of avalanches and the great masses of snow, and the colony is for at least three months cut off from the world. The snowfall in winter is so immense that at certain times nothing is seen of the poles for transmission of current although they are 25 feet high. The enemy most feared by the inhabitants of this little village is the south wind which is called "Föhn." Nobody is able to stand against it in the open air. If one is surprised by a storm in the open one has to lie down flat on the snow face downwards and get hold of something very heavy. To move on a few yards one can only use the short lulls in the storm. On the night between the 4th and 5th November, 1905, such a storm carried away the heavily weighted roof of the engine house like a piece of paper and all the windows on the south side were smashed by the pressure of the wind. It is well the colonists know from certain signs when a storm like this is approaching. If a fine white cloud can be seen on the saddle of the Jungfrau which sinks down on the north side like a veil on the snow and glaciers, then they know that such a storm is coming. The colour of the ice of the glaciers is also an infallible weather-prophet. If the ice is blue in different degrees, bright like a turquoise or dark like a sapphire, this is a sign that the weather is durable and fine. If the blue colour changes into a faint dull green, then snow and rain are to be expected shortly, but if the ice shows a monotonous white which makes the mountains appear ghostly and awe-inspiring then this means continuous foggy weather.

The boring work in the tunnel is carried on day and night, summer and winter, and the use of those sections of the railway which are open to the public in summer does not interfere with the construction of the new sections. The geological conditions are very favourable. The tunnel traverses high mountain limestone, the homogeneous and tenacious character of which renders it unnecessary to wall the inside. This is also the case with gneiss which the tunnel enters at an altitude of 11,800 feet.

The electrical power for the running of the railway and its construction is supplied by two rivers the Weisse Lutschine supplying about 2,700 horse power and the Schwarze Lutschine



Fig. 2. Eiger, with Jungfrau Railway.

supplying about 5,000 horse power, the latter being also used for light and power in different villages. There are most interesting features in the electrical installation of this railway, but I will not enter into these technical points here.

At the Eigergletscher station the line enters a long tunnel about 6.2 miles in length, which ends a few feet below the top of the Jungfrau. This tunnel leads along the Eigerwand to the Eigerwand station, 9,407 feet above sea level and 2.7 miles from the last station. The gradient of this section of the railway is mostly about 25 per cent. This station is completely hewn out of the rock and large windows give a view to the north over the level plain of Switzerland and the lower mountains. By means of a Zeiss telescope of 108 times enlargement, the hotels on the Rigi and Pilatus and even the people about them can be seen distinctly. In the evening a search light of 94 million candles' power sends its rays into the country, and it can be seen as far as 60 miles away, according to the atmospheric conditions. Very often one is above the clouds here, and the variety of the cloud formations is immense and most wonderful. It gives the impression of a sea with waves.

From here the tunnel winds round to the south side of the Eiger, i.e., behind the Eiger and on to the Eismeer station, 10,371 feet above sea level. This station is a triumph for the modern art of blasting. Great windows are blasted out. The passengers, on coming out of the half-dark tunnel are dazzled and overpowered by what appears before their astonished eyes. If one has never seen the region of everlasting snow and ice before in such immediate proximity one is quite breathless and full of admiration. Immense masses of perfectly white snow and ice are glistening in the rays of the sun and cover the mountains around. There are deep crevasses and overhanging masses of ice, and there is a sound like the thunder of guns with countless echoes along the precipices when a part of an ice wall becomes loose and falls, smashing into thousands of pieces. The whole picture looks like a sea which has frozen at the moment of its greatest storm. This view is strikingly in contrast with that from the Eigerwand station. The latter is characterised by mountains of moderate height, whereas the former consists of regions where ice and snow reign supreme, but both panoramas are overwhelming in their beauty. There is a large refreshment-room, the walls of which are covered with a complete series of wood carvings. One might imagine oneself in

a first-class restaurant in a continental town if one were not reminded, by looking through the large thick windows at the scenery outside, of being amidst the mountains, 10,371 feet high, whilst one can enjoy a dinner of half-a-dozen courses with champagne. The cuisine is worked entirely by electricity, there is no fire, no smoke, no ashes. Steaks and chops are done on an electrical grill. We find here also the highest post office in Switzerland.

As far as this station the railway is now finished and trains are running regularly in the season. The next section, which is now under construction, leads in a straight line with about a 6 per cent. gradient to the Jungfrauoch station, 11,138 feet. It will be a double station and will give a view on both sides of the saddle, *i.e.*, to the south and north. From this station the proposed line ascends again, with a gradient of 25 per cent., to the Jungfrau station, 13,425 feet high, which is 239 feet below the summit. Large rooms will be hewn out of the rock for refreshment-rooms and bed-rooms. From this station a lift, 240 feet high, will bring the traveller to the summit. It will be some years before the railway will be finished, *i.e.*, will have reached the summit.

It must be specially pointed out that the railway does not spoil the scenery at all. The line is always in the interior of the mountain, and there are only a few holes here and there at the stations. There is no smoke. There is a strong feeling, and rightly so, against the construction of railways which degrade our wonderful mountains, and a special committee has been formed to prevent the spoiling of them by commercial enterprises.

Let us now go back to Eismeer station. This station is the starting point for numerous climbs. The Berglihut can be reached from here without much difficulty in $1\frac{1}{2}$ to 2 hours. This hut is the starting point for most of the climbs in this region: for the Eiger, Mönch, Jungfrau, Fiescherhörner, Concordiaplatz, etc. A special tunnel leads down to the glacier from the Eismeer station. As there is no railway at my disposal, I have to ask you to take part in some climbing, and will describe the beautiful mountain scenery which will surround us, and whilst guiding you on the ascent to the summit of the Jungfrau, will tell you of some of my own impressions when I was climbing in this part of the mountains.

We have been staying over night in the club-hut on the

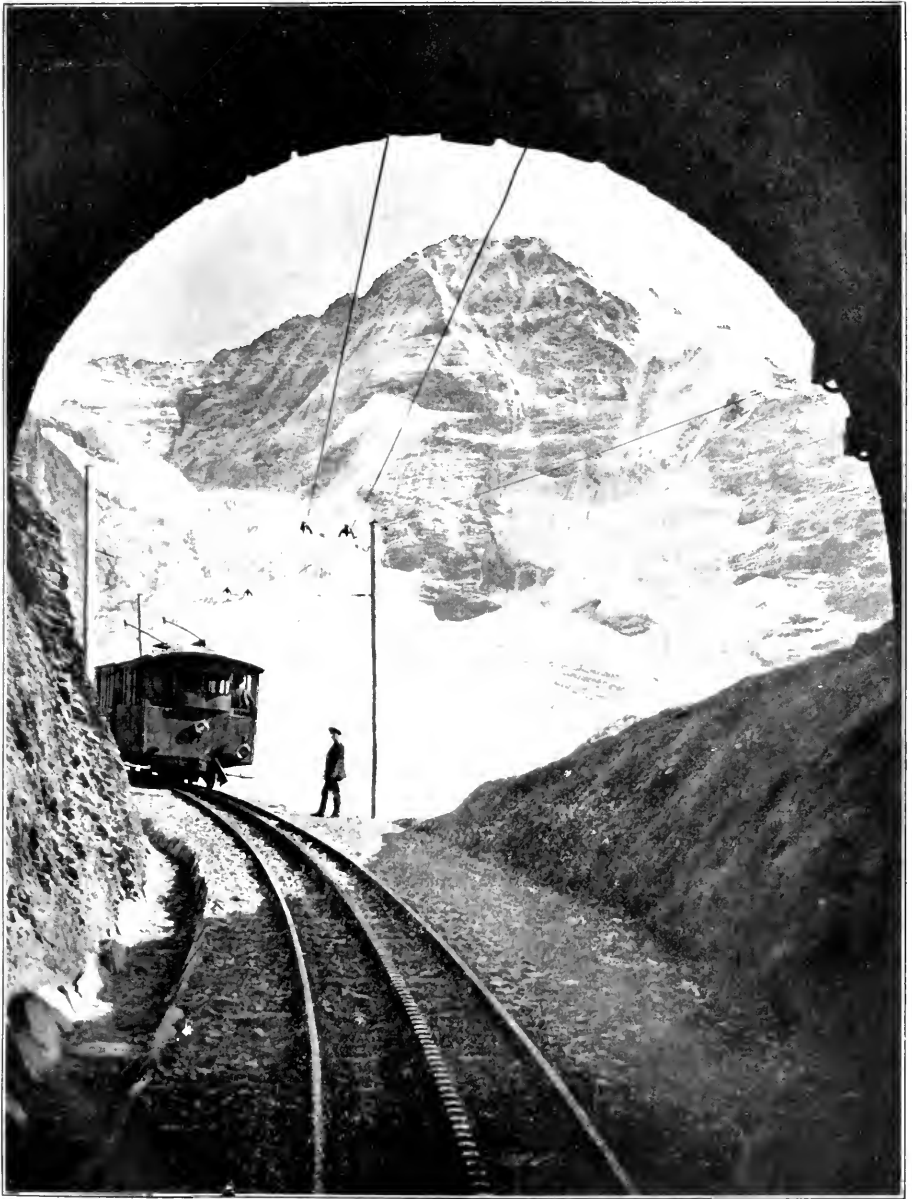


Fig. 3. Monch from upper end of the Small Tunnel.



Berglirock. This hut belongs to the Swiss Alpine Club, and is like most of these huts, only furnished with wooden shelves with hay to sleep on, and a little stove to cook the necessary food, which has to be cooked by each party. The order in which the various parties staying in the hut "would like" to cook their food sometimes causes considerable trouble. We start very early in the morning from the club-hut. It is still dark about 2 o'clock in the morning, which is the time at which we must start in order to diminish the risk of being met with falling ice masses and avalanches. The lantern of the guiding fellow-climber supplies a scanty light just enough to put the foot on the right spot to climb the rock and ice. Such parties with their lanterns seen from some distance on a moonless night, look like glowworms moving slowly upwards in the dark, the ground on which they are moving being invisible. On the mountains at this height daylight comes much sooner than in the lowlands. I dare not give a description of the beauties of a sunrise in these regions, because I could not give you one that would be adequate. On looking backward we still see the windows of the station Eismeer, far below us like six small holes in the mighty stone block of the Eiger mountain. The further ascent of the Jungfrau leads over the obere Mönchsjoch and the Ewige Schneefeld to the Jungfraujoch, from where the real ascent of the Jungfrau begins. Jungfraujoch station, of the Jungfrau railway, will be a tourist station par excellence. From here there is no difficulty in reaching the Rhone valley by the Aletschglacier, the longest glacier in Switzerland, with a length of about 15 miles.

I refer now to the picture showing the Jungfrau from the south side. (Fig. 7.) This photograph is taken from a balloon. In front we have the Ewige Schneefeld and at the right of the picture the Jungfraujoch. The route of the ascent leads over the Ewige Schneefeld up to the Rothalsattel. This saddle lies between the summit of the Jungfrau and the lower rock-mountain to the left. This route is at some parts rather steep and more or less difficult, depending on the condition of snow and ice. On both sides of the Rothal saddle one can see straight down for many hundred feet and on the north side even for some thousand feet over nearly vertical precipices of ice and rock. A steep ascent from here on snow and rock and ice brings us to the top where, if the railway had brought us up, a kind of tower constructed of iron would offer us some protection against

the high wind which is always blowing on a mountain of this height (13,664 feet).

It is impossible to describe the wonderful panorama which breaks upon one's view at this spot. We gaze over the many mountains and valleys and wonder whether it is reality or some beautiful dream. To the north we can see as far as Blauen and Feldberg, to the east as far as the Silvretta and Bernina groups, Monte Leone, etc., to the south to Monte Rosa, Matterhorn, Dent Blanche, Grand Combin, Mont Blanc, Dent du Midi, and to the west the view extends over the border of France.

At this moment we feel how small man is in the presence of the imposing vastness and beauty of nature. No other sound breaks the awesome silence than the thunder of avalanches. Such enjoyment could only be given to those who were gifted by nature with sufficient muscular strength and skill to climb. All others who are the great majority cannot now enjoy all this grandeur. When a railway, however, reaches the summit, it will be possible for almost everybody, even for the cripple, to have a glance at this wonderful world and feel the mighty hand of nature.

The heliogravure and the picture of the Jungfrau from the South (Fig. 7) are taken by permission from the work: "G. A. Guyer. In a balloon over the Jungfrau." (Publishers: G. Braunbeck-Gutenbergdruckerei, Berlin.)

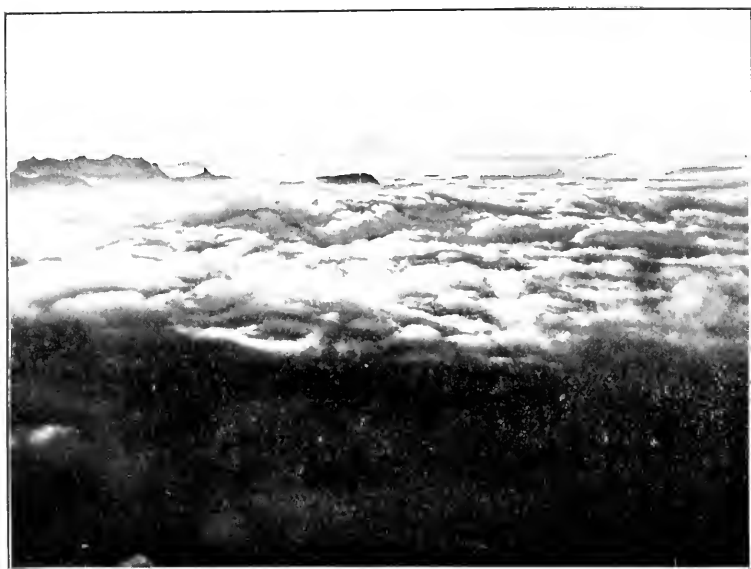


Fig. 4. View from Eigerwand Station, above the clouds.



Fig. 5. View from Eismeer Station.



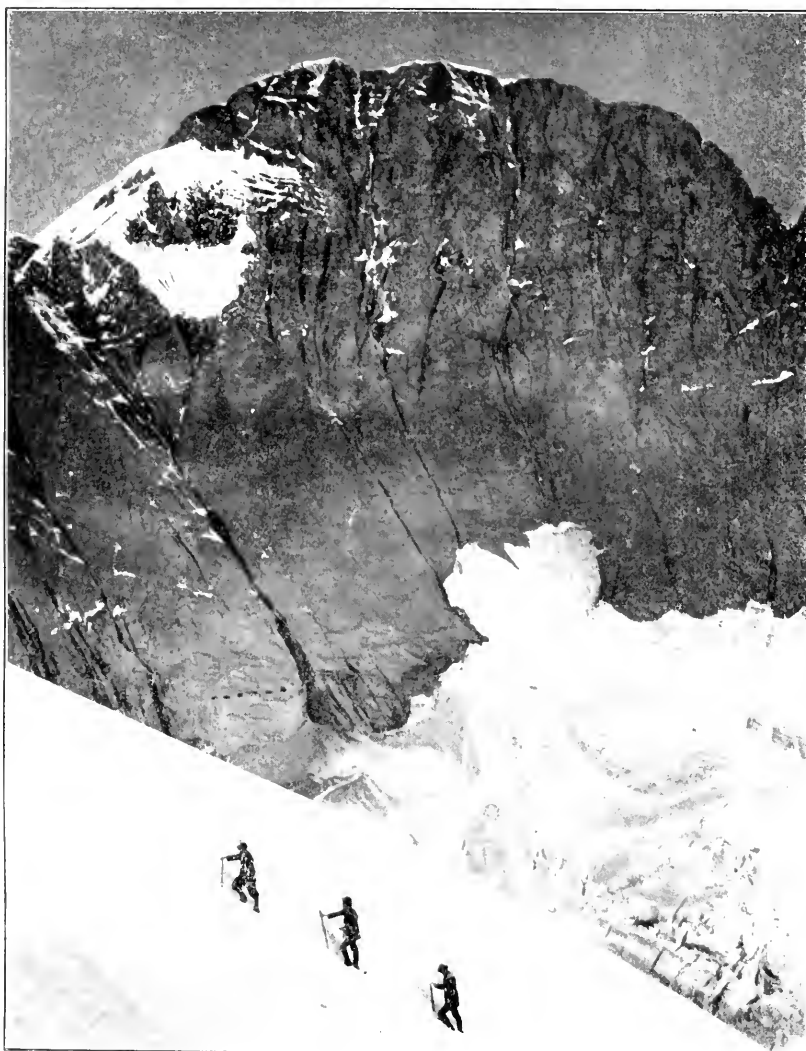


Fig. 6. On the way to the Jungfrau, with Eismeer Station below.

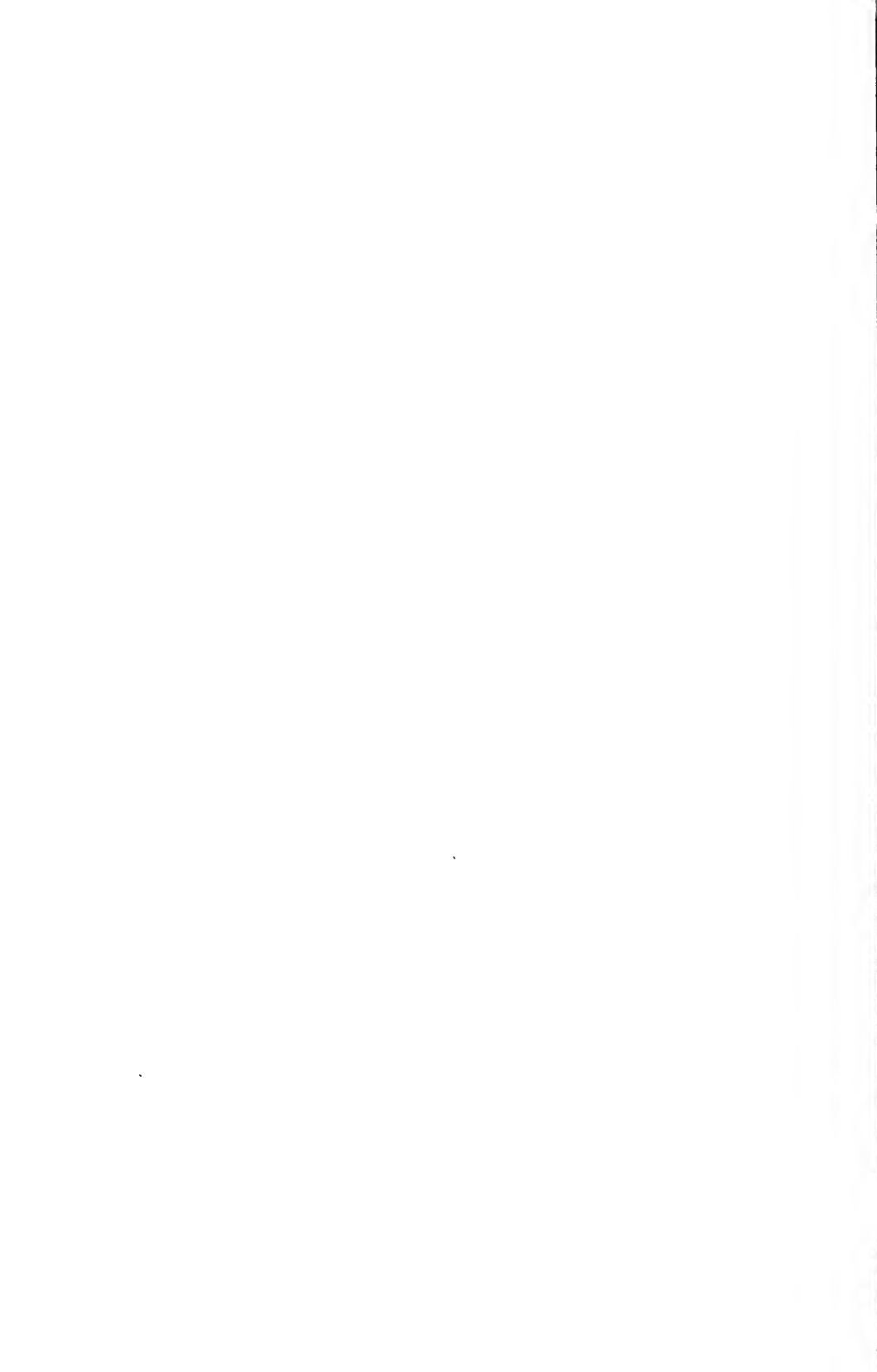




Fig. 7. The Jungfrau from the South.

FROM THE NIGER, BY LAKE CHAD, TO THE NILE.

By BOYD ALEXANDER, Lieut., Rifle Brigade, F.R.G.S.

(Addressed to the Society in the Chemical Lecture Theatre, Victoria University of Manchester, on Tuesday, November 3rd, 1908.)

BEFORE commencing the narrative of my expedition across Africa, I should like to make a few remarks on the object and composition of the expedition.

The first work we wished to carry out was a systematic survey of a portion of Northern Nigeria. Secondly, to explore Lake Chad, and the rivers between the Niger and the Nile, with the idea of demonstrating the wonderful system of waterways that connects the west with the east, and I think this is fairly well shown when I tell you that in the three years which the journey took to complete, the boats were carried for only fourteen days. Together with these primary objects special attention was to be given to tribal distribution and orthography of native names, and a careful study made of the distribution of the fauna to prove its affinity between the West Coast and the Nile.

The party consisted of my brother officer, Captain G. B. Gosling, Mr. P. A. Talbot, my brother Captain Claud Alexander and myself. With me I took my Portuguese collector, José Lopes. We were fully equipped with survey instruments.

Captain Gosling was active in obtaining zoological collections; Mr. Talbot and my brother were responsible for the Nigerian survey, for which they had special qualifications; while I acted as leader. For the river work we took with us two steel boats, double keeled, 26 feet long and 6 feet wide, drawing $1\frac{1}{2}$ feet for $2\frac{1}{2}$ tons, and made on the Hodgett principle by Forrest Bros. of Wyvenhoe. It took twenty-four men to carry each boat, which was in six sections. It would be hard to exaggerate their importance. In many places they did the work of bullock transport and carriers, which were impossible to obtain; and it must be remembered that it was necessary at

times to support a large number of followers, sometimes two hundred in number, who had to be paid and fed. For this purpose a great amount of trade-goods were carried, besides provisions, survey instruments and photographic apparatus.

The expedition left England on February 27th, 1904, and arrived at Lokoja on March 24th. There it organised and went to Ibi, our first base for the survey work which was to triangulate through the country north to Bauchi and connect that place with our subsequent work in Bornu. The survey party travelled by way of the Murchison Range and passed through the country of the Montoils and Yergums, pagan cannibals who inhabit the hills. The early state of their civilization is shown by the fact that they have not yet evolved as far as the village stage; each hamlet is against each other, each village against the next, and each tribe against its neighbour; the stronger prey upon the weaker, with the result that the former inhabitants have been driven right up to the peaks of the range, where they now lead a precarious existence. They are very hostile to one another, and are continually raiding their supplanters below to get captives. It was astonishing to see how these pagans had irrigated and cultivated their fields, and taken advantage of every available patch of soil on the hillsides. At this point progress was checked by both members of the survey falling ill, which necessitated their travelling to Wase, where there is a post. Here I might mention the Wase rock, an immense mass of igneous rock rising sheer out of the plain. It is about 600 feet high, and was probably the tube of a volcano, of which all the rest has been denuded away.

Having recovered their health, the party proceeded into the Angoss country past Mount Madong. The country was hilly, with numbers of isolated rocks like that of Wase. In these parts they came across an extraordinary amount of mica: the path followed shone with it like silver, and on either hand there were great sheets of it. Beyond the Madong mountains to the north-west lay a magnificent range with peaks 5,000 feet high. This has been named the Claud mountains in memory of my brother.

From Bauchi the work of triangulation was carried into the unexplored and interesting country of the Kerri-Kerris. It is only necessary to describe the towns of Gamari and Lewé, as they will be found typical of all the rest. Amid an alluvial plain rises a huge circular mass of chalk with precipitous cliffs

stretching sheer up on every side. At the top, 300 to 500 feet above the plain, the mass forms an absolutely level plateau, crowded with villages. In the midst of the plateau again, rises a very steep peak of ironstone or laterite, which for about 50 feet mounts by huge steps or terraces straight as the walls of a house. In the first terrace a series of deep narrow wells have been dug; these completely encircle the peaks at a distance of 10 yards or so from one another. From the top of the peak a most wonderful sight presents itself. One looks down on to the plateau and sees clusters of hamlets, each surrounded by a little wall of matting. Among them, and particularly along the edge of the cliff, are curious mud granaries. They are raised above the ground like hay-ricks or corn-stacks in England, and their height varies from 20 to 30 feet.

The Kerri-Kerri are a tall, slim race, and have little negro strain in them. They wear fine clothes made from native cloth, are very good metal workers, and their sword-blades, of peculiar shapes, are finely engraved. From their own account, they have lived on these strange strongholds from time immemorial, and no tradition of an older race, dispossessed by them, has been handed down. Their crops are cultivated on the plains below, but a six months' supply of food is always kept in the granaries already described.

From the Kerri-Kerri country, the Survey party eventually reached Ashaka, the new base, where the boats and supplies had been brought by way of the Gongola river, with considerable difficulties owing to famine and the strong currents of the river.

From Ashaka, the Survey party entered the Barburr country, and the work there was particularly arduous. At Dallwa it necessitated standing at times waist deep in swamp, and my brother, only recently recovered from fever, collapsed, and in the grip of the illness for the last time he was carried into Maifoni, where, in spite of the untiring efforts of Dr. Parsons and Talbot, who, as physician and nurse, showed a splendid devotion, he died on November 13th, after a fight of six weeks, conscious and cheerful to the end.

The result of the survey which we afterwards carried up to Kukawa has been embodied in the map already published, and this work was not accomplished without much hardship, for there was illness to be overcome, and the hostility of natives

met, and large numbers of carriers led and fed through famine-stricken countries.

By Christmas the expedition concentrated at Kaddai, on Lake Chad, whither, in the meantime, Gosling had brought the boats and stores by way of the Yo river.

From here Talbot and I carried out our first survey of the Lake. With the exception of a few island stretches of reed with no firm ground, there is good open water between the Yo mouth and Kaddai. The shore is quite open, with rough grass frequented by kob, gazelle, and large herds of hartebeest. It has an average width of $1\frac{1}{2}$ miles, and beyond that there are thick woods of mimosa. There are gentle bay formations all along the shore, and the slope of the land to the water is so gradual that there are no banks, and except in one or two places, the Lake can be reached without difficulty, for there is scarcely any marsh, and the land is firm with a sandy soil. We made our first voyage with the object of gaining the Shari mouth, but we found it was impossible to go south: a great barrier of dense marsh lay to our right. Hoping to find an outlet, we followed this belt as close as possible, but were eventually compelled to take a north-easterly course, the marsh giving way to continual low-lying land in the form of bays, in many places unapproachable owing to thick mud. Our prospects the first day were anything but bright, and the impossibility of getting into touch with the Buduma did not improve matters. Towards sundown we sighted a large fleet of canoes, engaged in fishing operations. They had not observed us, and under cover of the growing darkness we stole silently along under the lee of a promontory, and came within 500 yards of them. Then a great commotion followed. The canoes were drawn up out of the water, and boats and men disappeared into the reeds. The next day the water to our left became studded with innumerable small sandy islands, overgrown with tall grass, and many strewn with shells. On account of mosquitoes star-work was impossible, and consequently latitudes had to be taken during the day.

For several days we toiled along with hardly any progress, the boat often scraping along the thick mud. Our hopes were more than once raised by the sight of what we took to be Buduma settlements on the land to our right, but on approaching these, they turned out to be deserted cattle-stations, which consisted of reed-built huts very small in circumference, not

more than 4 feet high, and the sides towards the prevailing wind always plastered with mud.

By now we found that our provisions had run out, and we were obliged to shoot gulls for food. By the following evening, however, our cartridges were almost finished, and we were forced to make for rats, which abound on the islands, digging them out of their holes and making humble pie of them, and this is how we lived for another six days, ever hoping to find a passage to the east; but, realising at last the necessity of bringing our trip to a close, we changed our course to west, and after a tedious winding through a network of islands, we emerged into open water. This continued for a distance of 15 miles till the Yo mouth was reached, where we encamped on a small island, the site of a Buduma fishing-station, which presented a picturesque sight. There was a fleet of some twenty canoes, many full of dried fish, while hanging from frameworks of poles was fish in the process of drying. Their canoes, made of thick bundles of dry reeds tied together and turned up at the prow, are most picturesque. They are generally 18 feet long, and about 3 feet wide. Lighter canoes are also made, for travelling over shallow water and for escapes from sudden attack.

On December 23 we arrived back at Kaddai and Talbot left for England.

By the middle of February, 1905, Gosling, after elephant-hunting near the shore of the lake, left for Kusseri, our next objective, and a week later we started with the two boats once more to try and find a way across the lake to the Shari. We took the direction of the Yo mouth, with the idea of following the influence of its water. We passed an island on the way, where I counted a herd of sixty hippopotami that had been driven to the lake by the falling of the river. Five miles beyond the Yo mouth we struck a north-easterly direction. At a Buduma fishing island, I induced two boys to come with me as guides. For sixteen miles we found good open water, and then our course lay through a mass of small islands, through which we struggled on for ten miles, the men often wading and pushing up to their chests in mud. The next morning I found that we were near the east shore of the lake, for there were horsemen to be seen on the land about a mile beyond the island.

My difficulties were increased by the Harmattan Wind. It would rise daily at 9 a.m., and by 12 o'clock the sun would be

blotted out by a dense, damp mist, through which we had to grope our way, miserably cold. To show how strangely the water shifts with the wind, one morning, in retracing our course of the evening before, we found the water had gone, leaving numbers of fish of enormous size, some four feet long, stranded. As I could find no passage southward, and my men were worked out, I decided to retrace my way to Kaddai and refit for another attempt.

On March 2nd I took the same course as our first, again determining to find a south-west passage, but the reeds still proved impassable. On the outward journey we came upon a large Buduma fishing-fleet. At first they mistook us for other Budumas, whom they considered an easy prey, for it is their habit to plunder one another when they get the chance. Accordingly, they closed up ready for attack. But soon they realised their mistake, and the tables were turned. Before we could get up to them, many of the boats burst into flames, and the Budumas, swimming like otters, underneath the water, disappeared into the reeds. Hidden in the boats we found four slave boys, who were the victims of a traffic carried on between the Budumas and Tubus. They were in a shocking condition, and we took them back and released them at Kaddai.

We then determined to try and cut through the reeds. We worked steadily for two days, cutting a distance of about 800 yards, and beyond that I waded a mile, but there was no end to the reeds and "maria" bush.

I then relinquished this, my third attempt, and once more returned to Kaddai. When within half a mile of the shore, we found the water had disappeared, and as it was late, the men slept in the boats and my bed was put up in six inches of water, and that night I slept on the floor of the lake. In the morning the water rose earlier than I did, and I had just time to get out of bed as the lake was getting in.

I then abandoned Kaddai as a starting point, and trekked with the boats' sections to Seyurum, a distance of twenty-five miles, which was the next point to the south where there was open water. This took me a month and a half owing to desertion and sickness.

From Seyurum I made my fourth and last attempt, which necessitated 3 days' cutting through great belts of reeds, papyrus and maria bush which extended as far as eye could reach. We were obliged to spend the nights huddled up in

the boats. Sleep was out of the question owing to the hordes of mosquitoes. Many of the men preferred to sit up to their necks in water all night.

In the course of the work we discovered a gigantic turtle, nearly 100 lbs. in weight, with a shell of a pale lemon colour. On getting through the reeds, we found 5 feet of water. The aspect of the lake was now quite different from that of the Yo basin. Instead of low islands, there were big island stretches, which formed continual promontories ahead, overlapping one another on either side of our course, with channels sometimes not more than 100 yards wide; at other times forming deep bays as much as 2 miles in width, lined with belts of dark-green maria 10 to 30 feet in height.

Up to this time, the Budumas had held severely aloof, but now a Kachella, or chief, of a large fishing fleet we met, saluted us, and offered to show us the way to the other side. On the way he took us to his island, Karraragga, where we rested for two days. This island presented a very fertile appearance; the delicate green of young mimosa leaf was a pleasant sight after the sand-swept stretches of Bornu, and large herds of cattle roamed about at will. The Kachella's town consisted of reed huts, conical in shape. Each dwelling had its low round mosquito-proof house covered with close-woven matting.

The Buduma men are tall, with well-developed heads. Living as they do on fish, their skins are very sleek and oily. The women are small, and resemble the Kanembus.

On leaving the island I went to Wumnda on the east side of the lake, thence followed the shore to the mouth of the Shari. About 12 miles before reaching the Shari mouth, one leaves the great sombre maria belts behind and comes out into magnificent open water, and Chad for the first time assumes the grandeur of a lake.

Before leaving Lake Chad, I will attempt to give a general idea, based upon the observations I was able to make. As regards the size, I made it considerably less than it was formerly supposed to be. There is an idea that the lake is drying up, but my opinion is that it does not alter very much, and I believe that the supposed greater original area is simply due to inaccurate survey and partly to the fact that the villages on the Bornu side are several miles distant from the lake, which has given the impression that these determined a former shore-line. But I think that the sole reason for their position is one of

security, for, as there are no containing banks, and the land and water being almost level, the Harmattan, which causes the water to flow 600 yards over the land with an ordinary wind, drives it as far as 2 miles when the wind is strong. Besides, I was told by the King of Kowa, a town situate 11 miles from the lake, that in a great flood twenty years ago the water had reached as far as the town, and in another seven years ago it had risen past it and covered the plain as far as a place called Mongonu. While the floods lasted, the Budumas went up in their boats and established a fish-market just outside Kowa. Now, on the eastern shore, where there are good banks, and the water is not influenced by the prevailing wind, there are many villages close to the lake.

Another fact that has perhaps created the impression that the lake is decreasing, is that chains of islands that once were separate are now more or less joined together by marsh. But I think that this may very likely be due to the silting up of mud and sand against the obstruction of the islands by the opposing influences of the Yo and Shari, the two rivers that feed the lake. In fact, my observations go to show that the lake is practically two lakes, divided by the 15 miles or so of marsh and maria bush that I attempted to cut through, and these form the separate basins of the two rivers. Moreover, a Buduma chief told me that there was no communication between the two parts, and I found that the people on the different sides knew little of each other. This impression is further borne out by the very marked difference in the character of the scenery and the people. On the north, the shores are flat and bare, and the surface of the water, which is nowhere more than 4 feet deep, is broken up by small uninhabited islands that are little more than sand-flats. The people are neither numerous nor flourishing, and lead a lawless existence. But in the south or Shari basin, everything has a more flourishing appearance. The depth of the water is from 5 to 9 feet, and the islands, which form prominent features, are fertile and thickly inhabited. Everywhere the maria tree grows luxuriantly, and its close dark foliage gives a sombre character to the scenery. This is the real home of the Buduma, who are a prosperous enlightened people, gaining their wealth by fish and potash, and counting it in numbers of wives, slaves, and herds of cattle.

Previous to my work on Lake Chad, I had the fortune to witness a Tubu raid upon the Mecca caravan. At that time

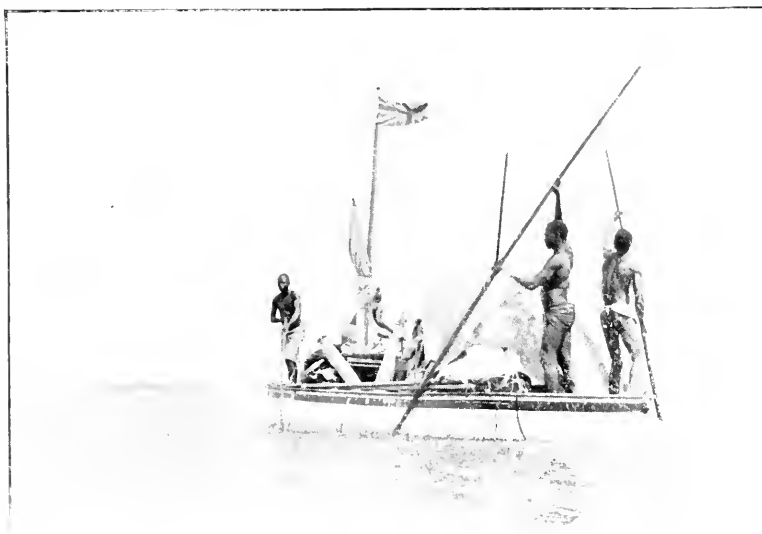


Fig. 1. Boat on the River Benue.



Fig. 2. Kerri Kerri Country.



the Yo districts were in a most unsettled state; natives went about fully armed, and only travelled by night, for fear of the Tubus, who were on the war-path. These people are the nomad robbers of the Sahara. Armed with long spears, and mounted on small ponies and camels, they cover long distances, concentrating suddenly when a raid is contemplated, afterwards to scatter and as quickly disappear. Many of the lawless Mobbur are their worthy allies, acting as spies, and sharing a portion of the spoils. While the last great Mecca caravan was travelling through this country, escorted by the Kachella of Yo, it was heavily ambushed near Bulturi. The Mobburs opened the attack by flights of poisoned arrows, while the Tubu horsemen charged on the flanks, cutting off numbers of the flocks of the caravan, which spread over two miles of road, and numbered seven hundred people and nearly a thousand cattle. With the loss of twelve men and thirty horses killed, the Kachella, who had eight spear-wounds, with his hundred horsemen kept the enemy at bay, and, under the protection of darkness, brought the harassed caravan into Bulturi, where for five days the Tubus hemmed it in. On the fourth day, the Kachella managed to get a runner through to me. Accordingly, with all the arrowmen and horsemen I could muster at Yo, I reached Bulturi in time to relieve him. At daybreak we moved out of the town. It was a picturesque sight. Whole families were there, driving their flocks and carrying with them all their worldly belongings, and their children, perched on the backs of bullocks and camels. Amongst this pilgrimage there travelled pale-faced Fulanis, Hausas from Sokoto, handsome dark-skinned people from Melle and Timbuktu, and many Mallams or priests, turbaned and clothed in white, walked calm and heedless of the danger, incessantly telling their beads. When close to Yo the Tubus were dispersed, for their leader had been killed, and the Kachella's warriors concentrated and advanced past me in a long line towards the town, and then the women and children crowded round the king, asking for news. All night long the hours were broken by the wail of women calling upon their dead men to return.

To go back to the expedition. Aseending the Shari, with fine steep banks and an average width of 500 yards, we travelled through the land of the Kotokos, the giants of the Sudan; and at Gulfei, the big Kotoko chief, some 6 feet 3 inches in height, received us with all his infantry and horsemen.

After leaving Fort Lamy the river has a winding course, with an average width of 800 yards, now and again widening out to a mile. In places the scenery reminds one forcibly of our English woodlands. Throughout its entire course the river flows through a very flat country, much of which is under water during the heavy rains.

Beyond Miltu the flat expanse is for the first time broken by an isolated group of wooded ironstone hills, known as the Togbau, about 300 feet in height, abutting on the left bank of the river. From the top, a vast view of a barren country presents itself, and my mind was at once carried back to a similar occasion, when I viewed the landscape from the top of the Keffi hills in Nigeria, and I could not help being forcibly struck by the contrast of the two scenes. There, as far as the eye could reach, stretched wide fields of yellowing corn, whose surface was often broken by clusters of hamlets where dwelt the happy harvesters, while here on all sides to the distance lay a barren stretch of bush and sand.

From Fort Lamy onwards the Shari region is thinly populated. Between Busso and Fort Archambault there are no villages, and the magnificent river flows through a silent land untouched by traffic of any kind, and one can travel for days without meeting a single native canoe. Regarding the natives, those on the right bank belong to the kingdom of the Bagirmi people, who have carried on for years a systematic slave-raiding against the Sara tribes, or Kurdi, as they are known to the Bagirmi; inhabiting chiefly the country away on the left bank, where they live in small communities, scattering their huts among their crops as a protection against surprise. They are timid people, but good and industrious farmers, growing chiefly millet and ground nuts; and, what is rare, both men and women work. They may be observed in the fields together, sowing their crops. After the ground has been cleared, the man walks along making a dab in the soil at intervals with his native hoe, and the woman follows with the seed, which she places in the hole and covers up with her foot.

Closely allied to these people, both in appearance and customs, are the Kabba-sara, who inhabit the vicinity of the river above Fort Archambault. Beyond the right bank to the east the women of the Kabba-sara insert enormous wooden discs 4 inches in diameter in holes bored in the upper and lower lips, and the face is disfigured to such an extent that it no longer

looks human, and the power of speech is reduced to a mumbling. This hideous custom is said to have originated in the mutilations which the women inflicted on themselves to prevent being seized by the Sultans of Bagirmi for their harems in the days of slavery. The raids of these Bagirmi sultans, followed by the devastations of Rabeh, have crippled and depopulated to a disastrous extent the whole of the Shari region. This great leader had no less than 60,000 men in the field, who devastated and fed on the land like locusts. Each division of this large army had its foraging-ground apportioned to it each day by the leader.

During our journey up the Shari the amount of game we met with was truly wonderful. On different occasions Gosling obtained elephant, giraffe, buffalo, rhino, hartebeest, bushbuck, duiker, water-buck, roan antelope, kob, ostrich, pig, and wild dog. This was accounted for by the fact that the dry season causes all this game to concentrate near the banks of the river.

At Archambault we found it necessary to collect a large supply of grain, for hardly a village lay in front of us, and our next object was the exploration of the Bamingi river, which flows through a deserted country. On August 6th we camped on a sandbank at the junction of the Bamingi and Gribingi rivers. The former is the larger, having a width of some 50 yards at its mouth. This river was still unknown to the explorer, unless we consider the record of a French trader, named Behagle, who attempted to ascend it, but at the rapids, about 4 miles from the mouth, had his boat badly smashed and was compelled to return. He was afterwards hanged by Rabeh at Dikoa. With the exception of these rapids, caused by a reef of rocks across the river, we found the Bamingi excellent for navigation. In August it was at its full, with a depth of 6 to 9 feet and a strong current which made our progress slow.

The river Bamingi has pretty scenery; sometimes the banks rise to a height of 60 feet formed by rocky knolls, and at these points the growth becomes tropical. For 130 miles, the distance we travelled up this river, we found the country uninhabited, and the impressive solitude was only disturbed by the herds of elephant, which at times frequented the gravelly sandbanks, and troops of baboons that followed us along the banks, gazing in excited wonder at our boats.

We next ascended the small rivers Gribingi and Numma, and crossed the Shari-Ubanghi watershed, carrying the boats for

4 days. Then we descended the Tomi river through a well-watered and undulating region. Here the character of the vegetation changes. Thick belts of forest full of rubber vine hide the streams, and the fauna for the first time belongs to the forest region.

In this part of the country, the natives have a barbarously cruel method of hunting elephants. When a herd is located in the dry grass, all the villages turn out with guns and spears and fire the grass all round the herd. The poor beasts make frantic attempts to break through the ring of fire, and are to be seen rushing madly to and fro in their agony, rooting up trees and throwing grass and earth over their scorched backs.

A journey of four days down the Tomi river brought us into the Ubanghi, or "drinker up of little rivers," a great stream some 1,200 yards in width, swelling to a mile at the bends. Its banks are fringed with trees, with undulating grass beyond. On either side chains of gentle rounded hills, about 150 feet in height, and devoid of trees, save in the hollows and ravines, loop sometimes close to the river line and sometimes wind away to a distance of a day's journey. Above the junction of the river Kwango, there are large wooded islands, some 3 miles long, inhabited by elephant, pig, and the small Congo buffalo. As one journeys on, the aspect of the river changes, and its course winds past wooded headlands that form a succession of bays. At Mobbai the river appears to be a dividing-line between a sterile and fertile land. On the right bank treeless hills, on the left extensive tropical forests, wind along the valleys. From the Tomi to Yakoma there are only two serious rapids—those at Mobbai, and the more formidable Setema rapids.

As regards the inhabitants, space does not permit me to mention more than the Banziris and the Yakomas. They are fine races, especially the Yakomas, whose men are veritable giants, and the finest specimens I have seen anywhere in Africa. All along the river, there are thickly populated villages, some over a mile in length, and the appearance of the people strikes one as being extremely healthy and prosperous. The young girls of the Yakoma race, deftly weave long plaited cords of black twine into their hair, which, falling over their shoulders to the ground, give the appearance of their possessing luxuriant tresses. The ends are wound on a stick like a big ball of twine that weighs 10 lbs., and is carried under the arm, and on the head when at work.

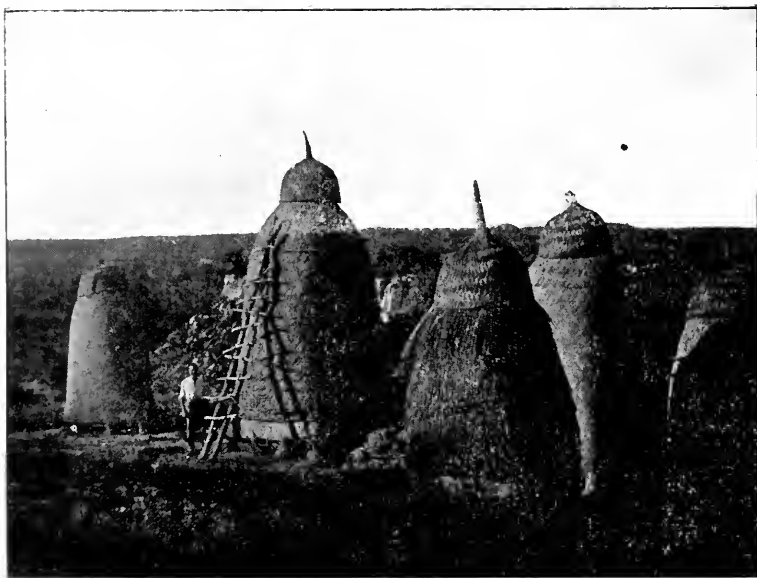


Fig. 3. Kerri Kerri Granaries.



Fig. 4. Buduma Canoe.

On January 1st, we arrived at Yakoma, a large Belgian post at the mouth of the Welle, and the next day we left to ascend the river, whose course has a width of from 800 to 1,000 yards, studded with rocks, and flowing through an ironstone country, where the natives work mines to a depth of 90 feet. A few days later, in a thick mist, we set out to pass the Voro rapids, about three days below Djabbir, the strongest and most dangerous on the Welle, stretching a distance of 3 miles and sometimes a mile wide, cut up by a maze of small rocky islands, covered with palm trees and tropical growth, between which the water rushes and tumbles headlong, the foam flying many feet into the air. With great efforts the boats mounted and were driven beyond the rapids.

The violent uses the boats had now been put to had caused splits to appear, and I was at a loss to find a wherewithal to mend them, till I luckily remembered having seen a native woman mending her pots with the wax of wild honey, and it struck me at the time as so interesting that I made a note of it. And now I tried it with unexpected success. Wooden wedges were driven into the cracks, and then sealed over with the melted wax. The restoration was complete, and Samson's proverb reversed, for out of sweetness came forth strength.

Except for good water between the Angba hill and Niangara, the entire course of the Welle is cut up by rapids and hidden rocks. The river folk are the Bakango, a numerous people, whose conditions have greatly improved since the Belgian occupation, for its protection shields them from the raids of the fiercer forest tribes.

It was at Angu that we first heard rumours of the existence of the okapi in the neighbourhood, and in the forest, some three days to the south-east of that place, we spent three weeks endeavouring to obtain one. The okapi, or *n'dumba* as it is very widely known by the natives, is very locally found, and Angu is the only part near the Welle where it is met with. We found its haunts were small streams running through swampy ground, thickly overgrown with a clean-stemmed plant some 6 to 8 feet in height, with large oval shiny leaves bunching at the top, the young shoots of which are an essential food of the okapi. In these localities it roams about singly or in pairs, and, according to the Mobatti hunters, three may occasionally be found together. Gosling, although he got to close quarters with it on three occasions, never saw it, so perfectly concealed

was it among these leaves. He says: "During the night the okapi will wander along in the mud and water in search of the young shoots of this plant. Here he may be found feeding as late as 8 a.m., after which he retires to the seclusion of the forest, where he remains until dusk. In the glades and clearings I found his spoor on ground frequented by buffalo and water-buck, but this is unusual, for his companions in the forest are more often the elephant, the greater bush-buck, and the yellow-backed duiker." At this time, José had been following a solitary animal for three successive mornings in the vicinity of a stream. He observed that, on leaving the water, the okapi always took the same course, between two large trees about a hundred yards from the stream. So, with the help of natives, he dug a pit $4\frac{1}{2}$ feet deep between the trees, and then carefully concealed it with branches and leaves. Very early next morning José again approached the stream, and heard the noise of the okapi rushing away. Soon there followed a loud thud, for the animal, taking its usual course, had fallen into the pit, and was secured. Owing to the thick leaf and forest, its restless nature, and keen hearing, even the natives find it difficult to track, and are obliged to resort to the method of trapping it in pits. They regard the animal as a mysterious creature, and say that it is always moving and never lies down to sleep. José's observations bear this out, for on several occasions when he heard it feeding, it simply paused to take a leaf here and there and then passed on again.

This portion of the journey was the most trying to the health of the party, the long stays in the hot steaming forest hunting the okapi, and the work on the Welle, which has an evil reputation for being the breeding-ground of bilious and blackwater fever, told severely upon our already weakened constitutions, and we were all attacked by fever. It was at Niangara that the expedition received its last great blow. Gosling was struck down with blackwater, whose deadly attack he laid himself at the mercy of by his refusal, almost to the last, to abandon his labours.

Leaving Niangara with a heavy heart, I next ascended the Kibali which has never before been navigated. On the south bank there is a semi-circle of igneous hills, about 500 feet high. In this range there are seams of magnetic ore, and I observed there were many trees on the watershed that had been struck by lightning. The Momvu, who inhabit these hills, told me that

when there were blacksmith's villages on their tops, many people every year were killed by lightning. At the foot of this range, a hut, during a terrific storm, was set on fire, and two of my men were knocked down and stunned; and a few days later a heavy thunderstorm broke from the south-east, with hailstones as big as beans.

Along this river there are many formidable rapids. Among these, the Andimanza which stretch for a distance of 2 miles, present a scene of wild grandeur. The river here swells out to a width of 400 yards, and is broken up by small rock-bound islands which cause tremendous chutes.

The banks of the Kibali are sparsely populated. In the hills south of the river are the Momvu and Mombuttu tribes, still unconquered. They build their frail huts of mud on the great slabs of rock, frequently using the caverns themselves as dwelling-places and shelters in time of war, and wherever there is enough earth they grow their maize amongst the rocks. In these hills I was fortunate enough to obtain from the natives two ancient stone implements. The tribes are ignorant of their origin and believe they are bolts of lightning which strike trees and kill men. The Azandi call them "mangua n'gamba," or "axes of the lightning." They say that these axes may often be discovered by turning up the soil immediately a tree has been struck by lightning; a little later it would be no good, because the stone would have gone back to the clouds in order to strike again! Many natives attribute a mysterious power to them, believing their discovery announces a friend's approaching death.

We next ascended the Ira or Bakwa, which up to now has been considered the main stream of the Kibali, but this is not correct. The N'soro is the true main stream. The Ira is navigable for twelve miles, after which there are many bad rapids.

The whole way we came upon numbers of elephants, which, so unaccustomed to man, allowed us to approach quite close, and it was a pretty sight to see them playing on the banks and bathing in the water.

From here I penetrated by road into the country of the hostile Mombuttu south of the Ira. Here the scenery is grand. A mass of mountainous hills rolls away, range on range in glorious confusion, their steep sides darkened with trees, save where they are scarred by clefts and sharp angles of bare rock.

And below in the deep valleys the courses of innumerable streams are revealed by their coiling coverings of tropical green. From here, where I climbed to a height of 4,000 feet, far away to the eastward on the horizon, I saw for the first time the grey blurr of the hills of the Nile.

Finding it impossible to reach the Nile by the river system to the east, owing to impassable rapids and hostile natives, I trekked with the boat to Yei, 8 days distant. The rise along this road was so gradual, that we were greatly surprised, when near Aba, suddenly to behold the huge panorama of the Congo-Nile watershed. Behind us to the south lay the dark green vastness of the Congo forests, whose monotony was here and there relieved by winding partings in its surface that told the courses of rivers. On either side, and to the north stretched endless plain with an occasional lonely hill, and far away to the east the sharp peaks of a sierra chain.

On October 13th I arrived at Yei and started to descend the river. At this point it is little more than a rocky mountain stream, 25 yards wide, and some 50 miles from its source in Mount Watti. For the first 20 miles we passed a succession of rapids in terrace formation, rendered more difficult by the obstruction of small green islands. It was laborious progress, sometimes only a mile a day was made, and the boat had to be got past the rapids by the men hanging on to the chain in the water from the stern. Sometimes trees, fallen right across the stream, had to be cut through. At other times, where a passage allowed, we took the risk and shot the rapids. The boat was now in such a battered condition that frequently after the passing of a rapid it had to be drawn out of the water, a fire lit, and the wax melted, and the wedges renewed. After this difficult 20 miles, the river decidedly improved, and a navigable reach of 15 miles brought us to the Azandi village of Kapi. It was at this place I saw the interesting ceremony of the signing of a treaty between the chief and an ancient foe. They met, each surrounded by his followers, and their headman made incisions in the chiefs' arms, and with a feather mingled the blood of one with the other.

From Kapi for 23 miles the river is good, with the exception of two rapids, the second of which was one of the worst, and certainly the most disastrous, we had to encounter. Owing to the tremendous current, the men on the chain behind for a moment relaxed, and the boat was driven with terrific force



Fig. 5. Cutting through the Reeds, Lake Chad

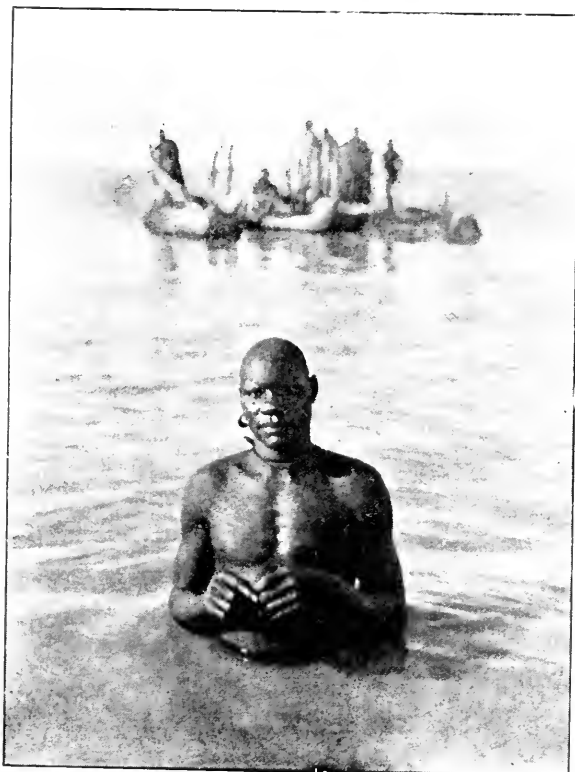


Fig. 6. Buduma, Lake Chad.



against an overhanging tree. The shock swept off two of the polers, who disappeared into the torrent never to be seen again.

In the open reaches, we came across numbers of hippos, and their closely-cropped feeding-grounds by the riverside afforded us excellent sites for our camps. They were not always successful in getting out of our way in time. On one occasion, as the boat was coming down at a rapid pace into a pool, we were all thrown together by a tremendous bump, and for a moment all thought we had struck upon a rock. But the rock snorted and plunged out of our way.

For the next 6 miles, up to the station of Wandî, the river is quite unnavigable. In places the boat had to be unloaded and dragged over the rocks, so as to avoid the chutes which were gigantic. The river in appearance ceases to exist, and the water pours itself as best it may over the slabs of rock with which the whole length and breadth are strewn. In this distance there are at least six big rapids. At one we had a very narrow escape of being smashed up. We had been going in smooth water for a time, and the men were all in the boat poling, when suddenly the current became strong, and the boat was carried helplessly along, each second nearing the steep. The poles were quite useless to check the increasing impetus of the boat. In spite of the heroic efforts of the men, the boat swung round, and the next instant crashed heavily against a large dead limb of a tree, where it stuck. But for this there would have been nothing to hope for.

The tsetse fly, the species that carries the germ of sleeping-sickness, was very much in evidence about Wandî, and I saw two cases of the disease. Further on it became still worse, and close to Amadi, I came across two villages that were wiped out by it, and the chief of another was brought to me in a dying condition. The same scourge carried off one of my boys who died just before we reached the Nile.

For 100 miles after leaving Wandî, there are nothing but rapids the whole way, and the one 6 miles from that place is the biggest we had yet seen, and presented a splendid spectacle. Here the river is 300 yards across, and a great volume of water sweeps foaming over steep rocks, past islands covered with beautiful palm trees, which are the resort of dog-faced baboons. In the neighbourhood of Raffai appear small hills of not more than 400 feet. These are inhabited by the Miza people, a tribe that struck me as rather original. The men, who are smooth-

skinned and gentle, adorn themselves with bead ornaments and girdles of beautiful design, while the women effect a masculine severity of costume, fruit-stones taking the place of beads. At Avurra the Yei becomes a splendid river, with an average width of 60 yards, and the country throughout is well populated.

It was now December, and the river was rapidly emptying itself: in places there was hardly enough depth to clear the keel of the boat, and it became a race between us and the water. To hasten our pace, we threw away all our belongings with a light heart, for our spirits were high, as we had said good-bye to the rocks. For about 90 miles to near its mouth, the Yei flows through a flat fertile country, where large herds of cattle and sheep roam at will. Often along the sloping banks one sees the brilliant green of young tobacco plantations. This is the land of the Dinkas, who, on our first appearance, ran away, but later, gaining confidence, flocked down to the river and lined the banks in hundreds. All naked and with their bodies painted a ghastly white, they shouted and danced and threw their long spears into the air. So, we made 60 miles, then trees, flocks, and men gradually disappeared, and the river wound alone through a vast empty plain. It widened and slackened, and the impression came over me that it was nearing its journey's end. Eagerly we craned our necks for a sight of the Nile, but this reward was still withheld: nothing but marshland as far as the horizon met our gaze. We followed the river till it lost itself in a lake surrounded by dense reed and sudd. We crossed the lake with irresistible recollections of Chad, and then found ourselves stopped by the barrier of marsh and sudd which choked our passage to the Nile. I then trekked 38 miles with the boat sections to Gaba Shambi, on the Nile. Thus we had reached the goal that we had set ourselves, and here our journey was brought to an end, which, in distance, had extended over some 5,000 miles, and in time occupied just three years.

Proceedings of the Society.

October 1st to December 31st, 1908.

The 797th Meeting of the Society was held on Tuesday, October 6th, 1908, at 6-30 p.m.

An inspection of the Museum and Library occupied the Members for the first hour.

At 7-30 p.m., Mr. F. Zimmern took the chair, and on his proposition the Minutes of the Meetings held on April 28th, May 30th, June 27th, July 11th, August 8th, and September 5th were taken as read.

It was reported that letters of condolence had been sent, by direction of the Council, to the relatives of the following deceased Members :—

The Rt. Hon. the Earl of Derby, Sir Joseph Leigh, Messrs. F. Mehl, R. H. Joynton, J. D. Calder, F. H. Kolligs, and John Snaddon. Acknowledgments were received in due course, the following being that from Lord Stanley :—

26 June, 1908.

Dear Sir,—I am desired by my mother to thank the Members of the Manchester Geographical Society most sincerely for the very kind sympathy they have expressed to her and her family in the great loss they have all sustained.

Yours sincerely, (signed) STANLEY.

The Election of the following Members was announced :—Ordinary : Messrs. W. S. Ascoli, F.R.G.S., Thomas Clapham, C. J. Gladstone, M. Grainger, M. Liebert, Paul C. Miller, H. L. Rothband, and R. Walmsley ; Associate : Messrs. A. E. Kiesling and T. P. Davies.

The Chairman announced that, owing to advancing age and inability to attend the Meetings, the Rev. S. A. Steinthal had resigned the Chairmanship of the Council, and his resignation had been accepted with great regret, but he had consented to continue to act as Editor.

Mr. Harry Nuttall, M.P., F.R.G.S., in compliance with the unanimous invitation of the Council, had accepted nomination and been elected Chairman of the Council ; and the senior Honorary Secretary, Mr. F. Zimmern, had been elected Vice-Chairman, after having held the office of Honorary Secretary during the whole of the 24 years of the existence of the Society.

The Rev. Napier Malcolm gave an address on "Persia." After speaking of the principal physical features, he gave an account of the government, the method of travel, and life in the towns of that country. He also gave a very full account of the various religions practised by the people of Persia.

Dr. T. Frank Southam moved, Mr. T. Kyle Dawson seconded, and it was unanimously resolved that the hearty thanks of the Meeting be accorded to

Mr. Malcolm for his very interesting and instructive address. After the Lecture a considerable time was devoted to an examination of the various objects brought by the Lecturer from Persia.

The 798th Meeting of the Society was held on Tuesday, October 13th, 1908, at 7-30 p.m.

In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on October 6th, 1908, were taken as read.

The Chairman mentioned the death of Mr. Jacob Earnshaw, J.P., and it was resolved that the sympathy of his fellow-members with his relatives in their loss be conveyed to them.

The Rev. George Furlong gave an account of his unique and thrilling experiences at the "Birth of a Volcano." The address was illustrated with 50 photo views of the eruption supplemented with a score of views of Samoan life. Mr. Furlong witnessed, in August, 1905, the birth and development of the Volcano, now called O Le Mauga Mu, in Savaii, which island exhibits lava fields in almost every stage of formation. After a period of earth unrest, two fissures opened on August 4, flame-coloured steam and vapour broke forth with heavy explosions, masses of débris were ejected, and soon began to build up the crater. Streams of lava carrying other matter rolled from the vent; their rate of progress was calculated at half a mile in twenty-four hours. The behaviors of the lava-streams was watched and described in detail. Mr. Furlong pointed out (among other phenomena) that the surface of the lava quickly solidified, and thus a tunnel was formed through which the flow went on, so that between the crater and the vast columns of steam where the lava reached the sea, it was difficult to realize that volcanic action was in progress. It was noted that the volcano was more active during the period of full moon than of waning moon; also that the fumes from the volcano were not always of the same nature. Several tidal waves were experienced, always in the same place, and were about 500 yards wide, and flowed inland about 100 to 120 yards. These waves were observed to occur when the crater was more than usually active.

The Chairman moved and it was unanimously resolved that the hearty thanks of the Meeting be given to the Lecturer for his very interesting address, and for the fine illustrations.

The 799th Meeting of the Society was held on Tuesday, October 20th, 1908, at 7-30 p.m.

In the chair, Mr. F. Zimmern.

The Election of the following Ordinary Members was announced :—Messrs. A. Crawford, A. Frischmann, F. C. Halliday, R. I. Irving, M. Morreau, and Charles L. Wollheim.

Mr. F. Oederlin gave a Lecture on the "Jungfrau Railway," with about one hundred slides of the railway in its construction and of the finished sections, as well as of the world of glaciers and mountains of the Bernese Oberland. (See page 137.)

The Chairman moved that the best thanks of the Meeting be given to the Lecturer, and those present supported the resolution with applause.

The 800th Meeting of the Society was held on Tuesday, October 27th, 1908, at 7-30 p.m.

In the chair, Mr. George Thomas.

The Minutes of the Meeting held on October 20th were taken as read.

Mr. Mark Sykes, F.R.G.S., addressed the Members on his "Travels in Turkey in Asia." The address was illustrated with a large number of lantern views prepared from photographs taken by the lecturer and his wife.

On the proposition of the Chairman it was unanimously resolved that the hearty thanks of the meeting be given to Mr. Sykes for his very interesting address.

The 801st Meeting of the Society was held on Tuesday, November 3rd, 1908, in the Chemical Lecture Theatre, Victoria University of Manchester (by kind permission).

Mr. F. Zimmern, Vice-Chairman of the Council, took the chair at 8 p.m.

Lieut. Boyd Alexander, F.R.G.S., gave an address upon his recent remarkable journey of over 5,000 miles across Africa, entitled : "From the Niger, by Lake Chad, to the Nile" (see page 145). The address was illustrated with a large number of Lantern Views from photographs taken on the journey.

The Vice-Chancellor of the University moved, Mr. Hermann Woolley, F.R.G.S., seconded, and it was unanimously resolved that the hearty thanks of the Meeting be given to the Lecturer for the intensely interesting account he had given of his remarkable journey.

Alderman Sir Bosdin Leech moved, the Chairman seconded, and it was resolved that the thanks of the Members be tendered to the University Authorities for their kindness in lending the Lecture Theatre to the Society.

The 802nd Meeting of the Society was held on Tuesday, November 10th, 1908, at 7-30 p.m.

In the chair, Mr. T. W. Sowerbutts, A.S.A.A.

Mr. J. T. Lightwood, Chief Consul for Lancashire of the Cyclists' Touring Club, described a "Tour through Oxfordshire," the address being well illustrated with lantern views. By special arrangements, members of the Manchester Branch of the Club were admitted to the Lecture.

The Chairman moved, Mr. G. E. Wood seconded, and it was unanimously resolved that the best thanks of the Meeting be given to Mr. Lightwood for his interesting address.

The 803rd Meeting of the Society was held on Tuesday, November 17th, 1908, at 7-30 p.m.

In the chair, Mr. F. Zimmern.

The Minutes of the Meeting held on November 10th were taken as read.

The Election of the following new Members was announced :—Ordinary : Miss Kate Qualtrough, Messrs. T. A. Edwards, Herbert C. Kullmann, F. Oederlin, and E. Oldham, J.P. ; Associate : Miss E. Woodhall and Mr. A. Bebié.

It was resolved that the congratulations of the Members present be tendered to the Rev. S. A. Steinthal, F.R.G.S., Vice-President, on the attainment of his 82nd birthday.

Mr. W. H. Shrubsole, F.G.S., gave an address, entitled: "In and about the Carpathians," illustrated with a large number of beautiful Lantern views.

Mr. R. C. Phillips moved, Miss Kate Qualtrough seconded, and it was resolved that the hearty thanks of the Meeting be given to Mr. Shrubsole for his kind services.

The 804th Meeting of the Society was held on Tuesday, November 24th, 1908, at 7-30 p.m.

In the chair, Mr. M. W. Thompstone.

The Minutes of the Meeting held on November 17th were taken as read.

The Election of the following new Members was announced—Ordinary: Rev. W. Thomas, Messrs. Alfred Pickford and Joseph Whalley; Associate: Miss Waddington, Messrs. G. F. Morton and H. C. Welsh.

Mr. J. Howard Reed, F.R.G.S., gave an address on "Dublin and the British Association," illustrating his remarks with lantern slides. The address constituted his Report as the Delegate of the Society at the Dublin Meeting of the British Association.

Mr. D. A. Little moved, Mr. A. Balmforth seconded, and it was unanimously resolved that the thanks of the Meeting be given to Mr. Reed for his services to the Society both as the Lecturer of the evening and as the Delegate of the Society at Dublin.

The 805th Meeting of the Society was held on Tuesday, December 1st, 1908, at 7-30 p.m.

In the chair, Mr. T. W. Sowerbutts, A.S.A.A.

The Minutes of the Meeting held on November 24th were taken as read.

The Election of the two following Ordinary Members was announced:—Mrs. W. M. Shipman and Mr. T. G. Turner.

Dr. A. C. Magian, F.R.G.S., gave an address, entitled: "To India's Coral Strand," illustrated with a large number of Lantern slides.

On the proposition of Mr. S. Massey, supported by the Chairman, it was unanimously resolved that the best thanks of the Meeting be given to Dr. Magian for his intensely interesting address.

The 806th Meeting of the Society was held on Tuesday, December 8th, 1908, at 7-30 p.m.

In the chair, Mr. R. Cobden Phillips.

Mr. A. W. Rumney, M.A. (Editor of the Cyclists' Touring Club "Gazette") gave an address to the Members of the Society and of the Cyclist Touring Club on a "Cycling Tour from the Alps to the Riviera," illustrated with original Lantern slides.

Mr. Maddock moved, Mr. Barnes seconded, and the Chairman supported a hearty vote of thanks to the Lecturer, and it was passed unanimously.

The 807th Meeting of the Society was held on Tuesday, December 15th, 1908, at 7-30 p.m.

In the chair, Mr. F. Zimmern.

The minutes of Meetings held on December 1st and 8th were taken as read.

Mr. Walter S. Ascoh, F.R.G.S., gave an address on "Guatemala: Travels and Experiences." (See page 97.) The address was illustrated with Lantern slides. There was on view in the Library a relief-model of the Volcano of Santa Maria made by the Lecturer; also a stuffed specimen of a Quezal, with all its plumage, and specimens of hand-made Indian cloth and ribbon, made in Itonicapam.

Mr. W. H. Zimmern moved, Mr. J. Howard Reed, F.R.G.S., seconded, and it was unanimously resolved that the hearty thanks of the Meeting be given to Mr. Ascoli for his interesting address and for his trouble in making the model and bringing other exhibits.

The 808th Meeting of the Society was held on Tuesday, December 22nd, 1908, at 6-30 p.m., and took the form of a Lecture to the children of the Members.

In the chair, Mr. M. W. Thompstone.

Mr. J. Howard Reed, F.R.G.S., Hon. Secretary, gave a lecture on "Across Canada." The address was illustrated by a large number of fine slides.

On the suggestion of the Chairman, a round of hearty applause was given by the children to show their appreciation of Mr. Reed's very interesting address.

Reviews.

“A Physical, Historical, Political, and Descriptive Geography.” By Keith Johnston, F.R.G.S., Leader of the Royal Geographical Society’s East African Expedition, 1878. Maps and Illustrations. Sixth Edition. Revised by A. K. Keane, LL.D., F.R.G.S. London: Edward Stanford, 12, 13, and 14 Long Acre, W.C., 1908. Price 12/-.

A standard textbook such as the above, which has been before the public for many years, must possess some special excellences to justify the publishers in issuing a new edition in these days of improved geographical teaching and study. To review the book aright, in the light of present educational requirements, we will take as our guide, one of the up-to-date syllabuses, such as the syllabus of the Oxford Senior Local Examination, a syllabus easily accessible to all, and see how far the textbook fulfils its requirements.

Fortunately for our comparison the syllabus is divided into much the same number of sections or departments of geography as is contained in the title of the textbook under review.

Taking firstly the Mathematical section, which leads off the syllabus, and which corresponds largely with the introductory chapter of the textbook, we find that each largely concerns itself with topography or local geography—direction and distance, the mapping and surveying of a particular district, as indicated on Ordnance Survey maps.

Although many of the technical details called for in the syllabus are not mentioned in the textbook, yet the practical part of the latter is beyond compare. The descriptions of the methods of surveying and mapping a small district are delightfully clear and simple, the work of a real traveller, not those of a mere book-worm or school-teacher. One feels that they are the actual experiences of the author in the heart of Africa, adapted to a small district in England. A student of any textbook whatsoever would do well to make himself familiar with the introductory chapter by a practical application—walking and cycling—to his own immediate neighbourhood. For after all what is geography but an actual study of the earth and all upon it—not a mere bedroom study of books, maps and charts.

Turning to the explanations in the chapter on physical geography we find them equally simple and clear with those in the Mathematical and Mapping Sections. But at this point there is a divergence between the modern requirements of the new syllabus and the contents of the old textbook.

We look in vain in the chapters devoted to Political Geography in the textbook for any explanations which would illustrate that inter-action and inter-relation between the physical conditions and the political divisions, etc., which is called for in the part of the syllabus devoted to the “Geography of Man,” where our attention is called to the following section—

A (d) (ii). “The influence of superficial configuration, outline, situation, climate, and other natural conditions on the distribution and the occupa-

tions of the population (including its aggregation in towns), on means of communication and transport, and on the development of commerce. The mode in which such influences have been affected by government and the progress of knowledge and invention."

To this extent, therefore, the textbook under review will not help the modern student, for any mention of such points as the above is non-existent.

The "Sketch of Historical Geography" in Keith Johnston's Textbook is a splendid piece of work as a record of the history of geographical discovery illustrated by beautifully clear maps showing the development of the world geography from the most ancient times. But as illustrating and explaining the inter-action and inter-relation between the physical and historical geography of countries the student will find the book wanting in this respect also, as in the case of the political geography.

Nevertheless the book is well worth possessing, and ought to be at the command of every teacher and student for its general excellence in other respects.

J. J. C.

"The British Empire (and Japan)." By W. BASIKER, F.R.G.S., Diplômé in Geography of Oxford University. London: Geographical Publishing Company. Price 21/- net.

The Atlas bearing the above title is a well produced and most useful and informing work. It contains some 213 maps and 272 illustrations all of clear and graphic character. The maps, many of which are drawn in relief, give a very clear conception of the physical features of the portion of the world dealt with.

The full title of the work ("The British Empire—Its Features, Resources, Commerce, Industries, and Scenery, together with the Physical and Economic Conditions of the World") gives a very good idea of its real scope.

The Atlas contains a vast fund of information under each of the heads above quoted either in the form of diagrams or tables. The student who requires general information regarding various Physical Conditions of the World will be almost certain to find what he needs among the series of maps, sixteen in number, devoted to the elucidation of such matters as Time, Terrestrial Magnetism, Isotherms, Atmospheric Pressure, Winds, Calms, Storms, Heights of Land, Depths of Sea, Rainfall, Vegetation, Ocean Currents, Tides, Deserts, River Systems, Volcanic and Earthquake Areas, and Kindred matters.

A full page is devoted to a concise explanation of Map Projections, while another one is filled with well drawn and very graphic explanatory diagrams of the various Projections in common use.

At the end of the work several pages are occupied with a list and description of the principal Commercial Products, notes of the illustrations, statistics of the smaller British Possessions, and a well arranged Index of places and physical features occurring in the Atlas.

The whole work is a very satisfactory production, and well worth the 21/- net which is charged for it. It reflects great credit upon its compiler, and upon the Geographical Publishing Company by whom it is produced.

J. H. R.

List of Maps, Books, Journals, etc.,

ACQUIRED BY THE SOCIETY FROM JANUARY 1st TO DECEMBER
31st, 1908.

MAPS.

EUROPE.

- Map of England and Wales, by Daniel Paterson. London: Carington Bowles, 1782. * Mr. C. Roeder.
- Norway. General Karter. Scale 1/400,000. Sheet XVI. * Norges Geografiske Opmaalning.
- Norway. Topografisk kart over Kongeriget Norge. Scale 1/100,000. L.9., T.5., 10.A. * Norges Geografiske Opmaalning.
- Norway. Specialkart. Scale 1/50,000. B 54. B 56. B 59. B 78. * Norges Geografiske Opmaalning.
- Norway. Generalkart. Scale 1 350,000. Sheets AI (I, II), Skagerrak. * Norges Geografiske Opmaalning.
- Norway. Kristiania Omegn. Sheet IV. Scale 1/25,000. * Norges Geografiske Opmaalning.
- A New Map showing the Seat of the War between the Allied Powers and France. London: C. Smith, 1865. * Mr. C. Roeder.
- Orographical Map of Hungary (Hungarian Names). Scale 1/600,000. Budapest: 1906. * A Magyar Förajzi Intezet Reszvenytarsasagtol.
- A Sketch showing Position of Investing Corps of Allied Armies before Sebastopol by Capt. Biddulph, R.A. London: Edward Stanford, 1854. * Mr. C. Roeder.
- The Crimea, chiefly from Surveys made by order of the Russian Government. Compiled and Drawn by John Arrowsmith. London: 1854. * Mr. C. Roeder.
- Turkey. Scale 1/250,000. Sheets: Gallipoli, Salonika, Mt. Athos. Topographical Section, General Staff. No. 2,097. London: War Office. * The Director of Military Operations.

ASIA.

- Persian Gulf and Adjacent Countries. Scale 1 4,055,040. T.S., G.S. No. 2,385. London: War Office. * The Director of Military Operations.
- India: North-Western Trans-Frontier. Mohmand Country. Scale 1/175,000. T.S., G.S. No. 2,374. London: War Office, 1908. * The Director of Military Operations.
- India: North-Western Trans-Frontier. Scale 1/126,720. T.S., G.S. No. 2,359. London: War Office, 1908. * The Director of Military Operations.

* The Donor.

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- St. Petersburg. Imperial Russian Geographical Society. Journal. Vol.
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- Stuttgart. Württembergische Vereins für Handelogeographie. (Nothing received.)
- Tokio. Geographical Society. Journal. 1908, Nos. 229-240.
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- Tours. Société de Géographie. Revue. 1908, No. 1-4.
- Upsala. Geological Institution of the University of Upsala. Bulletin. 1906-1907, Vol. VIII. (See also list of Books.)
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List of Members,

DECEMBER 31st, 1908.

Note.—H signifies Honorary. C—Corresponding. L—Life. A—Associate,

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 LBrown, James, J.P.
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THE MANCHESTER GEOGRAPHICAL SOCIETY.

Rules.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science : as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisations and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object, and shall not make any dividend, gift, division, or bonus in money unto or between any of its members.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1. 1s., or he may compound by one payment of £10. 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members. Any member, whose subscription is in arrear for two years shall not be entitled to receive the Journal of the Society.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

Ordinary Meetings.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of the proceedings shall be as follows :—

- (a) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.
- (b) Presents, whether of money, books, maps, charts, instruments or specimens made to the Society to be announced.
- (c) The election of new members to be declared and the names of candidates to be read.
- (d) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

Annual Meetings.

30. The Annual Meeting of the members shall be held at such time and place as the Council may determine.

31. Fourteen days' notice of such meeting shall be sent to every member within the United Kingdom who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

Special General Meetings.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by 20 ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

The Council.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the most efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

President and Vice-Presidents.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

Chairman of the Council.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and Officers, and to summon, when necessary, special meetings of the Council and of Committees.

Treasurer.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the book of accounts shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

Secretaries.

49. The duty of the Honorary Secretaries shall be :—

(a) To conduct the correspondence of the Society and of the Council.

(b) To attend the meetings of the members and of the Council, and minute their proceedings.

- (c) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission, and the papers communicated to the Society, which have been directed by the Council to be read.
- (d) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies, and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretary, to issue the notices of the Council and of the Society, and to act under the instruction of the Council.

The foregoing Rules, as now amended, were approved and adopted at a meeting of the members of the Society, of which due notice had been given to the members, held in the Town Hall, Manchester, Wednesday, October 3rd, 1894.

(Signed) GEORGE, President.
 S. ALFRED STEINTHAL, Chairman.
 F. ZIMMERN, Honorary Secretary
 JAS. D. WILDE, M.A., Honorary Secretary.
 ELI SOWERBUTTS, Secretary.

[Copy.]

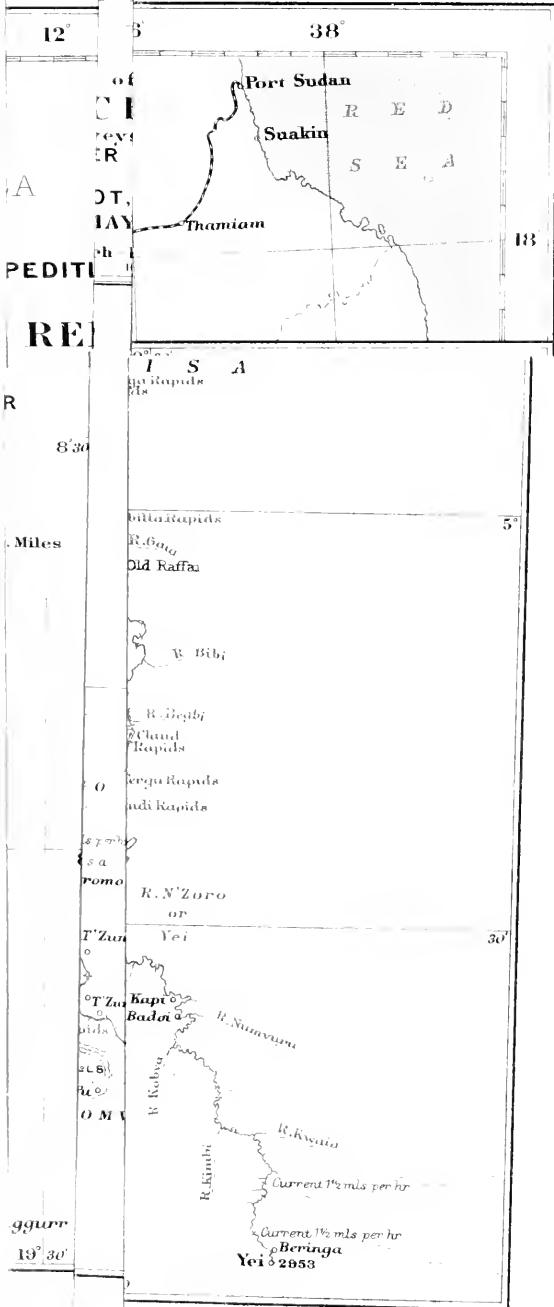
It is hereby certified that this Society is entitled to the benefit of the Act 6 and 7 Viet., Cap. 36, intituled "An Act to exempt from County, Borough, Parochial, and other Local Rates, Lands and Buildings occupied by Scientific or Literary Societies."

Seal of Registry of
 Friendly Societies.
 E. W. B.

This 15th day of January, 1895.

CENTRAL AFRICA.
Alexander.

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MANCHESTER GEOGRAPHICAL
SOCIETY



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1909

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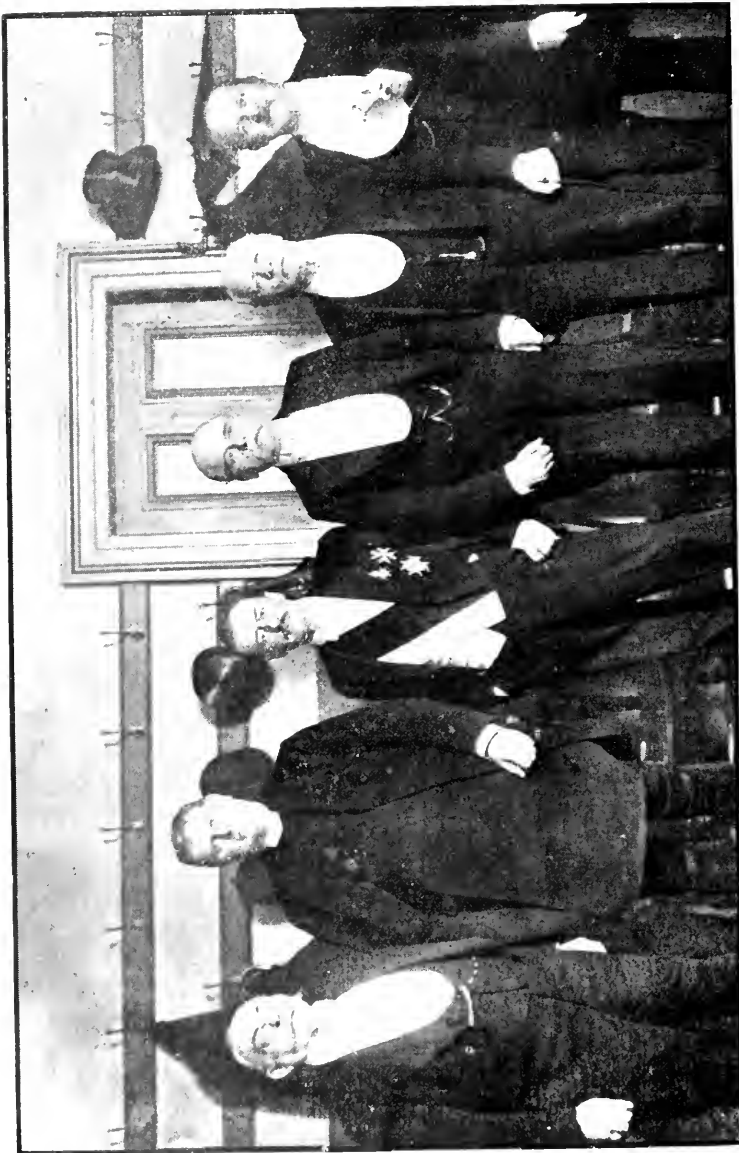
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DR. SVEN HEDIN IN MANCHESTER.

Left to Right : Mr. Salis Simon (Swedish Consul), Rt. Rev. Bishop Welldon (Dean of Manchester), Dr. Sven Hedin, F.R.G.S., Mr. Harry Nuttall, M.P., F.R.G.S., Mr. F. Zimmer, F.R.G.S., and Mr. D. A. Little.

At the Free Trade Hall, February 12th, 1909.

The Journal

OF THE

Manchester Geographical Society.



THROUGH UNKNOWN TIBET.*

By Dr. SVEN HEDIN, F.R.G.S., &c.

(Addressed to the Society in the Free Trade Hall, on Friday,
February 12th, 1909.)

I LEFT Leh on August 12th, 1906, with the strongest caravan I have ever had; twenty-five Ladakis, ninety-seven ponies and mules, and thirty ponies hired for the first month. Of the animals only six came through. Dr. Arthur Neve had recommended to me a young Babu, Robert, who proved to be a very excellent help in several scientific observations and a favourite with both Ladakis, Tibetans, and myself. My noble friend of so many Asiatic years, Sir Francis Younghusband, had been kind enough to provide me with the very best caravan-bashi that could be got, Mohamed Isa, who had been with Younghusband to Mus-Tagh and Lhasa, and was Ryder's and Rawling's caravan leader; he was at the side of de Rhins when he was murdered in Eastern Tibet in 1894, and he had an experience of thirty years of Asiatic travels. I shall never forget the great kindness with which H.H. the Maharaja of Kashmir, his private secretary, Daya Kishen Kaul, and, in Leh, Captain Patterson, helped me in every possible way to get together a really first-class caravan.

We went north-east over Marsimik-la, crossed the Karakorum east of Chang-lung-yogma, crossed Ling-shi-tang and Aksai-chin, crossed Deasy's, Rawling's, and Wellby's routes, kept east and east-north-east, and turned south-east between the routes of Bower and de Rhins. On the heights of the Buka-

* We are indebted to the Royal Geographical Society for permission to use the map and illustrations. For a full report of Dr. Sven Hedin's Lecture, members are referred to the "Geographical Journal."

mangna range we lost nine mules in one day, but to the south the country became more and more hospitable, with plenty of grass and water. After eighty-three days' loneliness we found the first nomads, and then we passed black tents almost every day, and could buy yaks to replace our dead animals. We left to the east the lake which de Rhins calls Ammoniac lake, continued straight south to Bog-tsang-tsangpo, which I followed a couple of days to get a connection with my map of 1901, turned again south-east, crossing two considerable ranges; from one of them just a little bit of Dangra-yum-tso could be seen to the south.

We reached Ngangtse-tso on December 28th, and here appeared my old friend, Hladje Tsering, with a little escort to stop me. The first day he told me I could never proceed in this direction—I had to leave Naktsang territory at once and go north or west; but the next day he gave me permission to continue towards Shigatse. I have never been able to understand why Hladje Tsering changed his mind, but I have heard that this cost him his place and rank. Perhaps it was wrong of me to expose him to such a great risk, but I believed he had got some secret order during his stay in my camp, and he probably believed I had got some private permission to visit Shigatse. Moreover, my geographical morals are quite different to my ordinary morals, and if I can possibly make any geographical discoveries—I go on. And on we went south-east, crossing six passes. I really do not know why I hurried on this time much quicker than usual, without stopping anywhere, and making very long marches. It was as if some invisible force had pushed me on, and even when we reached Ye-shung, on the northern bank of the Tsangpo, where several great gumpas were a strong temptation to visit, I did not stop, but hurried on to Shigatse, and entered the city late in the evening of February 9, 1907. On the 11th, in the morning, one lama and one official arrived from Devashung; they told me news had reached Lhasa from Hladje Tsering, and at once they were sent with a little force to Ngangtse-tso to stop me and force me to return. And when they heard I was gone, they hurried on in my steps and reached Shigatse a day and a half after me. If I had travelled just a little slower I should never have reached the town, never seen Tashi-lunpo and the Tashi Lama.

I stayed six weeks at Shigatse, or rather in Tashi-lunpo, where I spent the whole time. The Tashi-lama, or Pancher

Rinpoche (Banchin Bogdo, as he is called by the Mongolians), is one of the most remarkable and fascinating men I have met in my life, and I shall never forget the great hospitality and kindness he showed me as long as I was his guest. I arrived just at the Losar, or New Year's festivals, and was invited to every day's play. How very wonderful and picturesque it all was. The Losar hymns of Tashi-lunpo made a deeper impression upon me than even the Church music in Kasansky Sobor in Petersburg, or Uspensky Sobor in Moscow. They are full of faith and longing, of mysticism and harmony, and they lead the listener away to the land of dreams and hope. To begin with, they go in crescendo and then in diminuendo as far, far away as if the singers were already at the gates of Nirvana.

During my stay in Shigatse I made acquaintance with another man whom I shall never forget, Major O'Connor, although I never met him personally; but we were in very lively correspondence, and he gave me any amount of valuable information and advice. The Chinese High Commissioner, Thang Darin, and the Amban of Lhasa, Lien Darin, were extremely polite and kind in their letters to me: they probably wished me to go to Gyantse, as it would be easier to get me down to India from there. But I did not go to Gyantse at all. The Tibetan authorities of Lhasa seemed not to know at all what to do with me. They have hardly made acquaintance with anybody who has been so difficult to get rid of as me—except Younghusband, of course.

As to the ambassadors from Lhasa, who had to deal with me as to which way to return, I would not tell them openly that my wish was to take some northern road where I could study the great range of Nienchen-tang-la further to the west. I thought they would be suspicious, and stop me altogether. But I managed to get permission to take the Raga-tsangpo road, and from there the escort took me up over the head range again, which I crossed by the pass Chang-la-Pod-la, and thus I got some 50 miles more of the western continuation of the range.

Now it was my intention to go to Dangra-yum-tso, discovered by Nain Singh, and by help of some rupees the escort agreed to take me down there. As I have said, my geographical morals are a funny sort of thing, but well—they give me their lakes and mountains, and I give them my rupees, and both parties are extremely pleased and satisfied with each other; but

for them, of course, it is a risk. Now this time, when we were two short marches from the lake, and it could be seen in the north as a thin blue line, I was stopped by a force from Shansa dsong and made to go down to Raga-tasam. I had however fixed the situation of Targo-gangri, Targo-tsangpo, and Sershik-gumpa, all three heard of but not visited by Nain Singh; and I had discovered Shuru-tso, a rather big lake at the very northern foot of the head range. I crossed this range again in Angden-la, continuing it some 60 miles further west. In Raga-tasam I touched Ryder's and Rawling's route for the first time since Shigatse.

Dangra-yum-tso is much too big on Nain Singh's map, and his Mun-tso, two small lakes, are situated not south but west of southern Dangra-yum-tso. Both Targo-gangri, one of the most magnificent snow mountains with glaciers I have seen in Tibet, and Dangra-yum-tso (or Dangra, as it is usually called) are holy; it is exactly the same combination as Mansarowar and Kailas in the west, and Nam-tso and Nienchen-tang-la in the east. It takes the pilgrim five days to go round the lake: the water is slightly salt, but they drink it anyhow, as it is holy, and a man or a pony who has drunk of it will for ever be safe from wolves and robbers and sickness. At the eastern foot of Targo-gangri, one day south of the lake, is Sershik-gumpa, a comparatively rich temple monastery. The Lamas belong to the Pembo sect. I do not know exactly the difference between the Pembos and the orthodox, but when the orthodox say, "On mane padme hum," the Pembos say, "On mate moti sale do," and they hate each other heartily. The Pembos have the little funny peculiarity of turning their prayer-wheels the wrong way, and both, of course, believe the other will burn in eternal fire, or, at any rate, be re-born in a very poor and miserable form of existence.

From Raga we went to Saka-dsong, leaving the beautiful snow-massive of Chomo-uchong, or "The High Nun," to our left. In Saka Mohammed Isa died and was buried strictly after the Mohammedan ritual. One year later some Tibetans told me that ghosts were haunting the grave every night, and from the interior of the grave one heard mysterious sounds and sighs, so nobody dared to come near it.

Several times I tried to get permission to go north of the Tsangpo, but always in vain; once we tried to slip over, but were stopped by Bongba men. I wrote to Lien Darin and

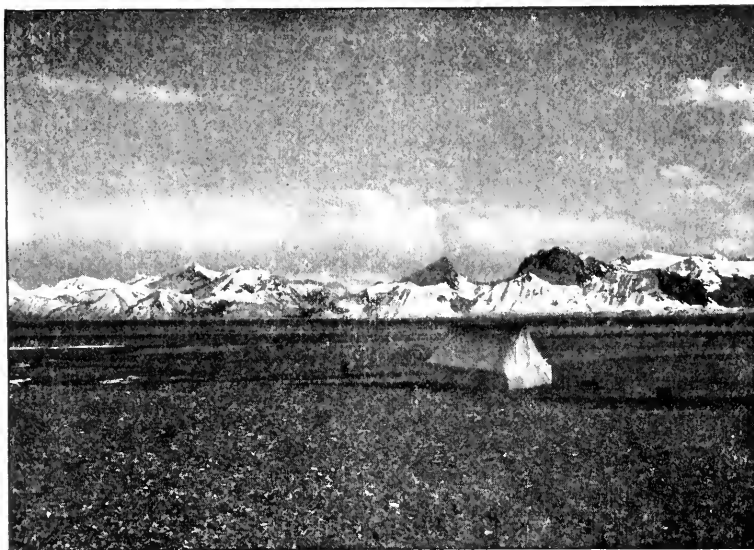


Fig. 1. Mountain Range in North-East Tibet.



Fig. 2. Mountain Scenery, North-West Tibet.

Thang Darin with special mail-runners. Lien replied, certainly I could take a northern road if I liked; but I got his letter three months too late. Thang said he could under no conditions let me go to the north-west, "as both people and country were wild there." I wonder how he knew that. It was really hard to go further and further west, and to leave more and more of the great unknown country to my right, because this patch north of the upper Brahmaputra was the greatest white patch in Asia, with only one exception, a part of the Arabian desert.

Some of the fanatical Lamas of this region (the Tsangpo) dedicated their lives, as it were, to darkness. In one almost hermetically sealed grotto I knew of one Lama who had lived in darkness for three years, and had never seen the light of the sun. He was fed through a subterranean passage with flour, rice and water, which were handed in by means of a long pole. Another had lived in these shadows of night for 69 years. They never see the light, or rather, do not come out, till they are carried out dead. The attendants one day see that the bowl of food has not been touched, and then they know that the lama is dead.

The next problem that interested me specially was to find the source of the Brahmaputra, and I have described in a short note how this trip was successfully carried out, so I will not take up time with it now. It was a proud feeling to stand at the three-headed source of the magnificent river that goes out in the ocean near Calcutta. But perhaps it was still more wonderful, some time later on, to camp over a night at the little rock from which the Indus comes out as an abundant spring, growing bigger and bigger on its adventurous way down through the mountains, singing its eternal songs between the rocks, the same melodies as in the Macedonian's time. I had a feeling as if the fate of my own life got connected through this river in some little way with his, although 2200 years lay between us and "*sans comparaison*," of course. But all this, as well as the interesting question of the watershed between the Brahmaputra and the Sutlej, and how the Sutlej still, although underground, comes from Mansarovar and Rakas-tal; further my adventurous navigation days and nights over those two lakes, my pilgrimage round the holy mount of Kailas or Kang Rinpoche, and my journey up to Yumba-matsen and down to Gartok—all this has to be left to my next book.

The two passes, Lachen-la and Jukti-la, which I crossed on

this trip, are situated in the very considerable range which stretches north-west to south-east, one day north of Mount Kailas, and which I was almost sure was the same range I had crossed in Se-la, Chang-la-Pod-la and Augden-la. Between Jukti-la and Lachen-la are Dopchen-la and Ille-la, and west of Jukti-la several easy passes—for instance, Pema-la. At Chang-la it has been crossed by innumerable explorers and hunters. The Indus follows the south-west foot of the range the whole way to Gilgit, and the range goes through Ladak, Baltistan and Chitral, and seems to be in very near relationship with the Hindu-Kush, thus going through Afghanistan also. But here was the weak point; it had never been proved that this western range was uninterruptedly one and the same as the eastern one south of Tengri-nor, and when I had come so far I would give my life to solve this beautiful problem, which might certainly be called the most important and magnificent geographical problem still left to be solved in Asia. But when I reached Gartok I was far from the definite solution. Between Augden-la and Lachen-la I had left a gap some 300 miles long, and of this gap I knew nothing, although I and Nain Singh were the only explorers who had gone round it. Only step by step should I be able to understand and to penetrate into the very soul of this gigantic world of mountains. It takes time—of course it must take time to digest such an enormous lot of stone as this mountain system. It can be done only successively and with an angel's patience. Every new pass over the head range will make the complicated orography clearer and open new perspectives.

When I arrived in Gartok I was sure I *could* not leave Tibet without having crossed the unknown country at least once, so I decided to go round again and to enter the Chang-tang from the north, and cross the whole of Tibet diagonally once more, though I knew it was a matter of half a year to reach regions which were only one month from Gartok, and this half year was the winter.

From Gartok we sent couriers to Gulam Razoul's father in Leh, old Haji Naser Shah, to arrange a quite new and complete caravan for me. He would even provide me with new men; not a single man of the first set should follow me, as they might have been recognized later on. When I reached Durguk, November 30th, 1907, the new caravan had arrived the very same day, and everything was ready.

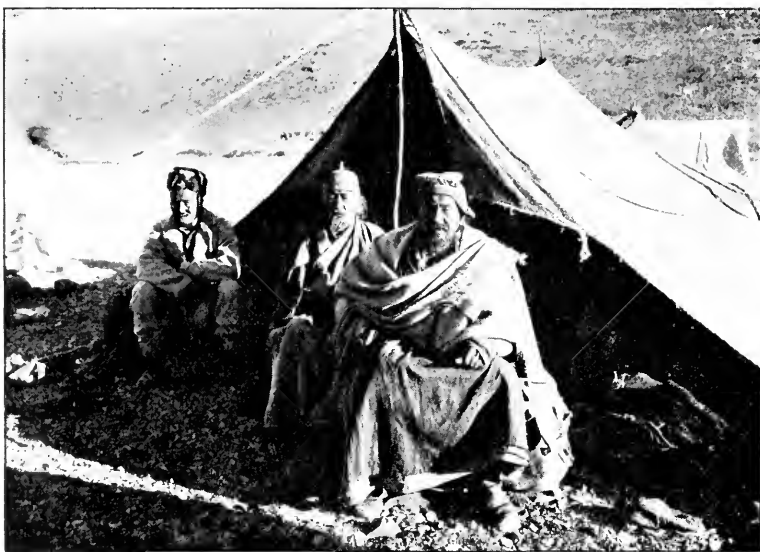


Fig. 3. Mohamed Isa and two Ladaki Chiefs.



Fig. 4. A Lake in Central Tibet.



In Gartok I had told everybody that I was going to Khotan and Peking. Even Haji Naser Shah and the new eleven men believed this was the plan. I went so far as to send a telegram to Renter about Khotan. It was quite necessary that nobody should suspect anything else, because Rudok-dsong has spies in Ladak, specially one in Durguk, and if he should have got the slightest suspicion about the real plan, we should have been stopped somewhere north of Rudok. My new caravan-bashi, Abdul Kerim, was a perfectly honest man, but the greatest ass I have ever met. I ordered him to take corn for the animals for three months, but as he was sure we should go to Khotan, he took corn only for twenty-one days. For the men, fortunately, he took five months' provisions as ordered. I had one little tent, the men two bigger. My luggage was reduced to a minimum, three boxes only; amongst their contents there were two complete Ladaki dresses, as it was my intention to travel in disguise as a Ladaki merchant as soon as we came across natives. Only three ponies, two mules and one dog were veterans from the first journey. Perhaps somebody might recognise them. Oh no, they were all dead long ago, when we met the first Tibetans. All the rest, men and forty animals, were new.

We left Durguk on December 4, and it was a hard journey that began now, the hardest I have ever made. We penetrated deeper and deeper into the heart of Asia, but also into the heart of a new winter on those enormous altitudes. From Sheyok we took a man, who had to look after our twenty-six sheep; and as he was a new addition to the caravan we became thirteen—but we were not superstitious. We met several caravans from Yarkand. One of them was a perfect wreck, and had lost fifty-two ponies on the road. In one caravan I met my old servant, Mollah Shah, who was also with Littledale, and now he had not been to his home in Cherchen since he left me in 1902—what a wonderful life of wanderings and struggle they live, those Asiatics. Most of the Yarkandis advised me to wait till spring, as the Karakorum pass was very bad. The whole way is full of dead ponies. At one place, during two hours' ride, I counted sixty-three. Some of them looked as if they were only taking a rest, some were half buried in snow; the dogs barked at them until they got accustomed to see them. At several places we passed heaps of boxes and big packets of silk left by caravans that had lost all their animals—it is like ships

having to throw all their cargo overboard when they begin to sink. It is a real *Via Dolorosa*: those grey granite rocks could tell no end of sufferings they have witnessed; in the night one thinks one can hear the sighs and heavy breathing of an endless carnival of animals, the veterans not able to walk any further.

In the nights the moonshine was brilliant, the mountains stood like black coffins on both sides of the valley, with the blinding white snowfields over them. A lonely raven followed us for a month: I hate them: they only wait in case somebody may be left behind. But on December 16 the caravan got an addition—four puppies: two were drowned, one died the very day he opened his eyes to get a glimpse of this cold mysterious world: but the last one came with me to Simla.

At Burtse, where the cold went down to -35°C . (63° of frost Fahr.), I made the first discovery during this journey—only eight days' corn left. To return to get more would have been to spoil the whole plan. I was quite prepared that all the animals should die, and we should have to go on foot as far as we could. Just here a big valley from the east seemed to invite us; if we found a road here we should save several days. A man was sent up and reported that the way was excellent, so we went on and marched the whole long day to a point where the valley was so blocked that hardly a monkey would have been able to continue further. The country was absolutely sterile. In the night the animals were kept tied up: they ate two sacks and most of their ropes. So the next day we hurried back the same way: we had lost three precious days, all were tired, and the situation looked rather hopeless. Mohammed Isa's pony from Shigatse was the first to die; it looked tired and done for where it had fallen in the snow: it seemed to need a long, long rest. The raven at once pecked out its eyes. Now our sheep began to die of cold, height and fatigue. On the evening of December 23, in the ravine Kisilunkur, the men, eight of whom were Mohammedans, began to sing a rhythmic and melodious hymn to Allah, praying him to let us cross the Dapsang without a snowstorm. And still nobody knew my real plan. So they were rather astonished when I, the next day, gave orders on the height of Dapsang to turn straight east. We left the Karakorum pass to the north, went over the range by another pass, and the whole day we ploughed a track through deep snow. The night came down over the enormous snowfields, biting cold: the temperature went down to the freezing point of

mercury (-38.6°C. , $69\frac{1}{2}^{\circ}$ of frost Fahr.). I had two candles and a nice fire in my tent, as it was Christmas Eve. The next morning one pony lay dead and hard in its place amongst the rest.

And now our difficulties began. The Mohammedans were constantly singing prayers to Allah, with their eternal "Allahu Ekber" and "Allhamdulillah rabel alahmin errahman errahim." I understand they were afraid and regarding the situation as specially serious. The ordinary profane songs of Ladak had long ago frozen away on their lips. Over comparatively open land we kept east. No grass at all, but where burtse and yapchan plants grew we used to camp. Not a drop of water; the animals had to eat snow. The corn was finished, and rice and flour from the men's provisions given to the animals—we only took care that a supply for fifty days should be kept aside.

In the beginning of January we lost ourselves in a labyrinth of mountains, passes and deep valleys, all belonging to the Upper Karakash-darya, going down to Eastern Turkestan. On January 11 we camped at the very same point as last year, on the shore of the Aksai-chin lake. It was like a funeral procession: every day took a mule or pony, sometimes two. All boxes, books that were read, and other unnecessary things were used as fuel. In the night of January 15th the cold was -39.8°C. (71.6° of frost Fahr.), the lowest I have ever read. During the periods of intense continental winter cold we had fortunately no wind to talk of. Ovis Ammon and Orongo antelopes were numerous now, and once our hunter killed two, and the two last sheep were spared for a time. On January 18 we had lost one-fourth of the caravan: the next day we found the first signs of Tibetan hunters, and on the 20th a hard storm killed two animals, one of which was the last mule I had bought from the Rajah of Poonsh. Now began a storm that went on for weeks without interruption and killed all our weaker animals. On January 26 we crossed Arport-tso on the ice, which was covered with snow, green and clear as glass. Two days later we lost three animals, and the last sheep was killed.

On the following days heaps of snow came down: we proceeded hopelessly slowly through two to three feet of snow. Nothing could be seen; the first ponies and mules in the caravan disappeared as phantoms in the snow drifts. At the western end of Shemen-tso I thought we should be snowed up

for the rest of the winter. It snowed day and night; walls of snow gathered round the tents; it was more like a Polar expedition. The storm continued as before. We followed the northern shore of Shemen-tso. On February 5 sixteen animals out of forty were left. Once more everything that could be spared was burnt. We had no meat left, and almost all rice was given to the last animals: it was necessary to make the loads lighter. The next day one mule and one pony died.

On February 8 we passed a trap with an Orongo antelope in it and all were happy to get meat. Of course this was a sign that hunters were near, and later in the day we found two tents, and could buy a couple of sheep, milk and butter. During sixty-seven days we had not seen a man. Now all my European clothes were burnt and I appeared in disguise, quite like other Ladakis. On February 15 we crossed the Karakorum range again, which killed three of our animals, amongst them my riding pony, which had carried me faithfully through so many adventures for one and a half years, and saved me when once a wild yak was very near to take both him and me on his horns. It was more hard than I can tell to lose him. On the other side we passed some gold-mines. And so we left Deasy's and Rawling's routes behind us, passed Lemchung-tso, always in storm, and entered new country. Again, since a couple of animals had died, several things were burnt or thrown into Lemchung-tso, even some thermometers, clothes, boots, belts, etc. February 24 we had still three ponies and seven mules, one fourth of the caravan left. Two days later great goldfields again. The 29th we reached Lumburringmo-tso, where the Senkor nomads said that never had any Ladaki merchants passed through Chang-tang, least of all in winter, and that we had a European hidden amongst us. We stayed two days with them, got friends, and bought twelve sheep for loads. For several days the storm was so hard that it was impossible to move.

On March 7 we camped on the bank of a river going southwest and frozen all over. One mule died, and the two dogs stayed with her to get a nice meal—they were never heard of afterwards. The storm made it impossible for them to follow our footsteps. As one of them was my special favourite since Srinagar, I felt quite lonely in my tent since she was gone. Now we had only a three months old puppy left. During the five journeys I have made in Asia, the first in 1885-86, I have had

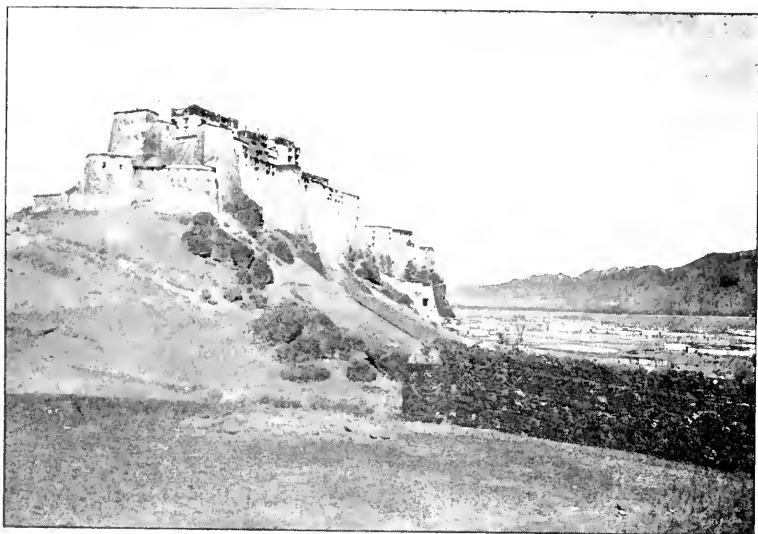


Fig. 5. Shigatse-Dsong.



Fig. 6. The Brother and Sister-in-law of the Tashi-Lama.



hundreds of servants, and have forgotten many of them. But I have not forgotten a single one of the dogs; they stand before my memory as clear and alive as if I had left them yesterday. And it is always more difficult to say good-bye to the dogs than to the men; the men go home to their friends and families and will be quite happy, but the dogs *have* no home and nobody to go to, and nobody will be kind to them afterwards, and when I leave them they look after me with longing wondering melancholy eyes, and I cannot possibly take them all home with me: I should have a real exhibition of Asiatic dogs by this if I did. Once I took a dog from Lop the whole way to Peking, through Mongolia and Siberia to Petersburg, but as it was forbidden by that time to take dogs over from Russia into Sweden, I had to give him to a friend in Pulkova. But there he almost killed half a dozen old women and every cat within a radius of three miles. So my friend gave him to a peasant, with whom, I suppose, he continued his wild Asiatic robber life.

And so we reached the district of Nagrong, with two stone houses and a big temple tent belonging to the Gertse Pun. From here the ground was excellent, an open latitudinal valley, but there was still much snow, and the storm went on. On March 16th we camped on the shore of Tong-tso, and now we passed tents everywhere and could buy sheep and a couple of yaks. I had to paint my face and hands black every morning, but I could never get so dirty as the Ladakis. Then we turned south, leaving the beautiful gangri Shakangsham to the east, crossed two small passes, and heard of Karma Puntso, the Governor of Bongba—it was critical to be so near to him. Once we bought a pony and a big dog, Takkar, wild as a wolf; he soon became our friend and favourite, and was quite mad with fury at every Tibetan he saw. The following days we went through a real labyrinth of mountains stretching east to west, crossed Kangsham-tsangpo, Chaklam-la, Sangchen-chu, Sangchen-la and Ladung-la. Our caravan consisted now of two ponies, three mules, two yaks, and twenty-five sheep, all under loads. And so we met the great merchant, Tsongpun Tashi, who stays here over the winter selling tea to the nomads on credit; in the summer, when they have sold their sheep wool, they pay their debts. He came to pay us a visit, and as he seemed very interested in our tents and their contents, Abdul Kerim cried to Kutus, one of my Ladakis, and Haji Baba (that was me) to go and catch a pony that had run away in the mountains.

Tsongpun Tashi is a powerful man from Lhasa, and it was nice to come away from him without any further adventures. In three days we passed thirty-two tents, and I had to go on foot and drive the sheep. On April 1 we crossed Satsot-la and came down to Chunit-tso, and followed its western shore for one day; here we met a great salt caravan from Tabie-tsaka, whence most of central and eastern Tibet get their supply of salt. Always keeping straight south we went over Nima-lung-la and reached the district of Kemar with several tent villages.

One of the mighty head ranges north of the upper Brahmaputra is now visible beautifully with great snowfields and glaciers. Turning south-east we had the magnificent Hlungpogangri to our right for several days, and for six days we followed the big river Buptsang-tsango up to Samje-la, situated in the watershed, and now it struck me that only Trans-Himalaya was the right name. So I had controlled the existence of the system some 110 miles further west from Angden-la. It was an agreeable feeling to go down along rivers reaching the Indian ocean, the Samje river, the Rukyok-tsango and Chaktak- (not Charta, which is wrong) tsango. We met and passed several salt caravans to and from Tabie-tsaka; one of them told the authorities of Saka-dsong that they had seen Ladaki merchants on a very unusual route.

It was my wish to see as much as possible of Chaktak-tsangpo and the gangris from which it gets its real volume of water, and so I went like a thief behind the mountains which are seen from the "tasam," following Chaktak-tsangpo, leaving it to the left where it comes from a valley in Kanchung-gangri, followed its left tributary Gabuk-chu to the east and reached an enormous tent belonging to two brothers, Kamba Tsenam and Panchor. They were kind, sold us provisions, sheep and a pony, and would show us the road over the two passes, Gebuk-la and Kinchen-la, as they said it was impossible to find the road in that labyrinth of mountains without a guide, especially as it snowed heavily again. They found it very strange that Ladaki merchants took this road, and said it would be a wonder if we could keep clear of the robbers; of course, the Mohammedans began to sing their hymns to Allah again.

We had passed Kinchen-la and camped in a valley going down to Raga-tasam on April 24, when we saw eight men leading their ponies and coming down from the pass. One could see by their dresses and arms that they were not ordinary



Fig. 7. The Source of the Brahmaputra.

nomads. Some of them went straight into Abdul Kerim's tent; their servants camped just outside the entrance to my tent where I kept hidden. They had a very lively palaver with Abdul Kerim; and when they had gone to their camp, from which they kept their eyes upon my tent, I went the back way into my men's tent; and now Abdul Kerim told me they were sent from Saka-dsong, as the authorities there suspected amongst us was hidden Hedin Sahib from the last year. If they were mistaken they had orders anyhow to look through all our luggage; and then Abdul Kerim had only to write a statement that no European was hidden amongst us, and we could continue our journey.

At once I saw clearly the whole situation and the course to take. To *write* such a statement was a little too strong even for my elastic geographical morals, so I told my Ladakis I should tell the Tibetans the truth, happen what would afterwards. The honest men began to weep as children, believing that I should be killed on the spot at least. But I rose and went down to the Tibetans and sat down between them at their fire. I put my hand on the shoulder of my old friend of last year, Pemba Tsering, and asked him if he did not recognise me at all.

He only opened his eyes as wide as he could and looked round at his comrades without saying a word, but his looks meant as much as—it *is* he. After a few minutes we were all friends, chattering and joking as if our meeting had been the most natural thing in the world. I had a delicious feeling of freedom since I was caught again by the Tibetans; I was no longer a prisoner in my own tent. I did not need any more to paint myself black as a Morian. I could wash—well, I won't tell what the water looked like after the first bath.

If I had not been discovered here I should have continued eastwards, but now we were caught, and the principal thing for me was to play my cards well. I had crossed the province of Bongba only once, and now I wondered if I should be able to cross it on one or two other lines. Panchor was in our camp, and he told me such a lot of interesting things of Bongba, that if I had been perfectly free to go where I liked in Tibet, I should have gone to Bongba, and my dream was now to finish up definitely with the problem of Trans-Himalaya.

I cannot now tell all my extraordinary experiences during the following days, our meeting in Semoku with the authorities of Saka-dsong, the distinguished Pun Dortche Tsuen, with

attendants and escort, all in pomp and show, my real friendship with him, our picturesque journey back to Kamba Tsenam's tent, and the kindness with which he let me take the very road I proposed—certainly not without risk for himself—no, I say, the eight days we were together would give material for a nice little book about the ways and views of the Tibetans. Well, I love them, I feel the deepest sympathy with them: they were always kind and polite and hospitable to me, and went as far as they possibly could without being disloyal to their own country, and after half a day's acquaintance we were as if we had known each other from childhood. The Lopliks used to call me Padishahim, or Your Majesty, and of course that title was more than enough for my ambition, but the Tibetans of Bongba called me always Rinpoche, or Your Holiness, the same title as given to the Dalai Lama and Tashi Lama, and that I thought was a little too much for me. But it was well meant, and I accepted the attention as a quite natural thing. In their Company we went round the "High Nun" and at Kamba Tsenam's tent everything was arranged. I should have only five of my men with me, the rest under Abdul Kerim would go over Samje-la to Buptsang-tsangpo, where we had to meet. This was an excellent arrangement; it caused no end of confusion. The people of Bongba certainly believed Abdul Kerim's party was the head caravan, because Karma Puntso himself and six Govas caused them a lot of difficulties, and when I passed with only five men, and now in Tibetan dress, as all my European things were burnt long ago, and my Ladaki things worn out, nobody paid any attention to us. It even happened that nomads asked *me* when the "peling" should come, and I used to say he was left behind, and if they kept their eyes opened they should see a most extraordinary fellow. So far as to Burtasang-tsangpo I should have an escort of ten soldiers, and they proved to be awfully fond of rupees.

The last evening we were together with the Saka authorities I invited them to a feast in my tent, in front of which a big fire burnt, and round it the Ladakis danced the dances of their country. I believe the Tibetans had never been so amused in their lives: they laughed, cheered, clapped their hands, and began to take part in the songs, and the whole time the snow came down as never before. It was late when the fire died away and my guests went to their own tents.

On May 6 we said good-bye to our new friends, and went straight north to the most important and interesting of all my

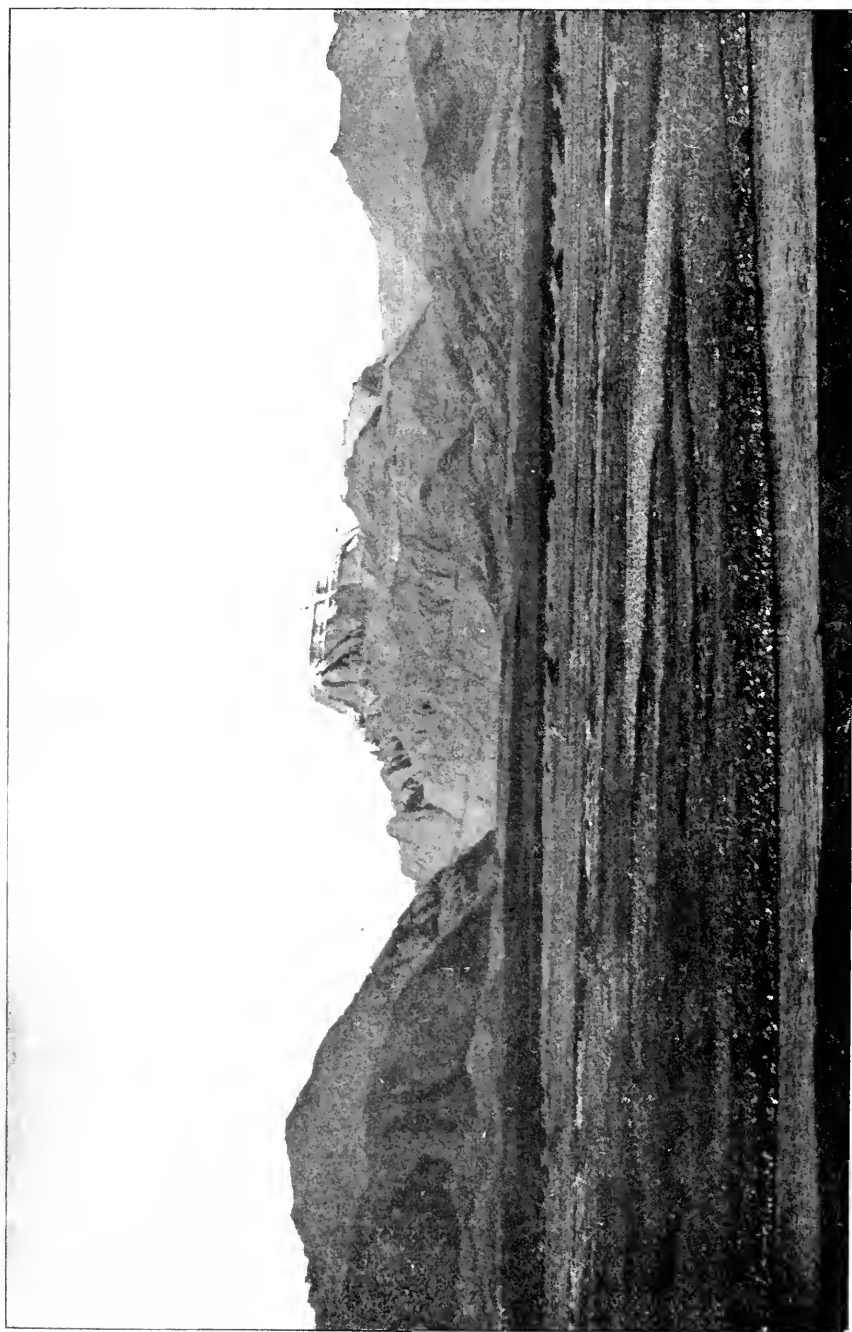


Fig. 8. Mount Karlas from the South-West.



Trans-Himalayan crossings. We crossed by Gyegong-la the Kanchung-gangri range, which is not the head range, but broken through by the Chaktak-tsangpo. In Lapchung-tso, situated to the north of this range, all the rivulets meet, which, coming from the head range, form the upper Chaktak-tsangpo. Here we passed a great trade road, being also a pilgrim's road, to Kang Rinpoche (Kailas). The country of Lapchung is very high and cold, and the winter lasts here much longer than elsewhere in the Trans-Himalayan Alps. Several important rivers begin from this upheaval: the Keddo-tsangpo, Raga-tsangpo, and Chaktak-tsangpo to the south, Buptsang-tsangpo and Soma-tsangpo to the north.

On May 12 we went over Sangmo-bertik-la, surrounded by glaciers—the rock, as in all Trans-Himalayan passes I know, consisting of different varieties of granite. Wild yaks are numerous. Almost every day we had storm and snow. So we crossed the Soma-tsangpo, which is, I should say, the biggest of all rivers in the interior of Tibet. It comes from the western side of the Shuro-tso range and empties into Terinam-tso. May 19 we crossed Teta-la, from where one has the most brilliant view over the whole Teri-nam-tso, Trans-Himalaya, Targogangri, and Shakangsham. In this clear atmosphere one sees some 100 miles distant; everything is light blue, rose and white, and often the boundary between a high mountain range and heaven is only marked by the white dotted line of the eternal snows. Shakangsham is a kingly mountain, raising its shining white head like a lighthouse over the gigantic mountain waves of lonely and desolate Tibet. It dominates a wider area than any other gangri on the plateau-land, it tells you the road as the stars in the night, and at last it disappears under the horizon as a dream of snow and rose colour. And the lake is marvellous; one is charmed and fascinated by the intensity of its colour, at the side of which the heaven becomes pale and the turquoise loses its attraction. The lake has been almost correctly placed by Nain Singh, although he has never seen it, only heard of it. He writes the name Tede-nam-tso; it ought to be Teri-nam-tso, or the “Throne mountains heaven lake.” In its eastern part there is a picturesque rocky island. The water is salt. Nain Singh's Ngangon-tso, nobody had ever heard of here. Two days we followed the southern shore to the west end, and then went up to Mendong-gunpa on the Soma-tsangpo. The monastery has two Kanpolamas, one of whom is a rinpoche, sixty monks, and seventy nuns, all dwelling in very

comfortable black tents. I suppose they have great fun together in the long winter evenings.

So we went up to the Soma-tsangpo, crossed Goa-la, left the little Karong-tso to our left in Bongba-kemar, and followed one of the great "tsalems," or salt roads, from Raga-tasam to Tabie-tsaka, left to our right Chunit-tso, which we knew before, and reached the Buptsang-tsangpo in Bongba-kebyang, our meeting-point with the caravan which had disappeared altogether. On June 5 we said goodbye to the soldiers, and for three days we followed the Buptsang-tsangpo down to its mouth in Tarok-tso. Only two very poor peasants followed us, and I could have gone wherever I liked.

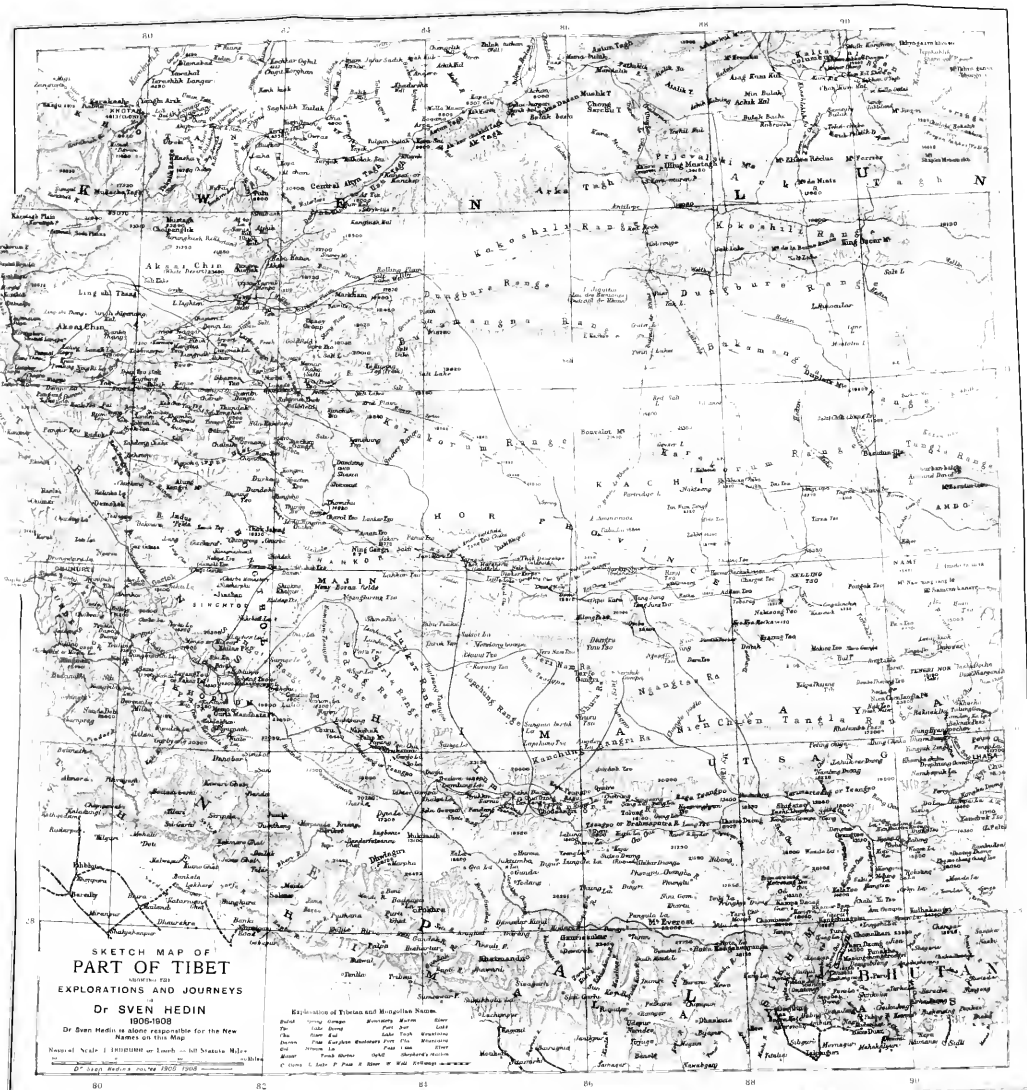
Tarok-tso has fresh water, but no visible outlet, showing that its water goes underground to Tabie-tsaka. It was my wish to visit this important salt depression, where so many roads meet from all sides of southern Tibet, but the Gova of the place refused it, telling me to take the mountain road, which of course proved to be much more interesting, as I got the remaining unknown part of Trans-Himalaya very clear, and this would have been absolutely impossible if I had taken the Tabie road. And I could see Tabie-tsaka from a high mountain. The salt is said to be upon clay, and there is very little water. Natives of Bongba may break as much salt as they like; other caravans have to pay some tengas to Devashung for every hundred sheep-loads.

So we passed Lunkar-gunpa, which has twenty lamas, four nuns, and two rinpoches, being a daughter temple of Sera. Some days north, not far from Lakor-tso, there is Marmik-gunpa, with twenty five monks and six nuns, and also affiliated to Sera. Lunkar-la is situated in the same range, which is called Hhunpo-gangri, north of Saka-dsong, but it is not a first-class watershed, as it divides the water only between Tarok-tso and Poru-tso; to this lake Goang-tsangpo goes down. Poru-tso is salt, and its old beachlines, which I measured, are 108 metres (354 feet) above the present surface of the lake, showing an enormous desiccation. At Lakor-tso I had measured old shorelines 133 metres (436 feet) high. Then we crossed Nyapchu-tsangpo coming from Men-la in Trans-Himalaya and going to Poru-tso; west of this lake we went over the beautiful ice- and snow-covered Surla range—I call it so from Sur-la, a rather high and difficult pass. On the western side is Rigi-changma, or Rundor; and here we followed north the big river of Pedang-tsangpo down to Shovo-tso, which also is salt. Our

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guides were two boys, one of them ten years old. I really do not know what the Tibetans were thinking of, leaving us quite alone.

From Tajep-parva-la one sees almost the whole Nganglaring-tso, called Ghalarang-tso on our maps. I suppose some pundit has discovered the lake, although I am not sure if he has ever been there, because the map is very wrong. He says, "Monastery on island," and has one little island in the lake; there are five islands, but not a single monastery; and he makes the lake extend from north to south instead of east to west. We followed this big salt lake for two days west; from the south Sumdang-tsangpo comes out. From south-west comes Lavar-tsangpo, which joins with the Aong-tsangpo from west-south-west; a river which begins from the eastern side of the mountains which to the west give rise to the Indus.

On June 26 I camped at Selipuk, and was received with the greatest hospitality by the lamas of this temple. One of them I had met in Raga-tasam, another in Lelung-gumpa last year, and the Pun, Sonam Ngurbu, of Chokchu, was here on his pilgrimage to Kang Rinpoche. Him I knew at Shagatse, and he was very polite, as he had seen how well the Tashi Lama had received me. Two days afterwards I joined the head caravan.

From Selipuk we went south-west to Tokehen. As this line is parallel with my journey to Yumba-matsen the previous year, it is of great interest. Here we cross the Trans-Himalaya by the two passes Ding-la and Surnge-la, Ding-la being very high, Surnge-la easy, although it is the head pass, the watershed between Lavar-tsangpo going to Nganglaring-tso and the Sotlej. North of Surnge-la is Argok-tso, from which a tributary goes to Aong-tsangpo. Everywhere it would have been very easy to slip away to the north or east or anywhere, as nobody looked after us, but by that time I had got about enough of Tibet after those two long years.

Now I must finish. I wrote this Lecture between Selipuk and Tokehen, and it is forty-three pages long in manuscript. So as my diary is a little more than 6,200 pages long, I should have to deliver one hundred and forty lectures like this if I should be able to give all the information I have brought home. This Lecture is thus a very short account of a very long journey, the results of which it will take two or three years to work out. But, once put into order and published, I hope it will prove to be of some use to India, and then my work in the grand loneliness of Tibet will not have been in vain.

VENEZUELA.

By Miss GABRIELA DE BOLIVAR.

(Addressed to the Society in the Geographical Hall on
Tuesday, February 16th, 1909.)

I HAVE come this evening to try to give you some impressions of that vast country, the Republic of Venezuela, interesting from every point of view, very little known and greatly misjudged.

I shall tell you of certain things I have seen and felt during my stay of two years there, for although I am a Venezuelan citizen, I have only spent two years of my life in my own land.

It is my opinion, however, that in order intelligently to study the manners and customs of a country and of a people, it is well to have had the opportunity of learning the manners and customs of other countries and of other peoples, for one can form better conclusions by the aid of comparison.

Venezuela lies so much out of the beaten track of tourist and traveller that but little is known in Europe of its scenery, its products, its people, or even its history. It is for this reason that I have ventured to try to add a little to the scanty knowledge people here possess of a country bordering on British Guiana and opposite to Trinidad, and from which it is possible the meat supply of your own West Indian Colonies must sooner or later be derived.

Although Venezuela is not far removed from the route of travel to North and South America it is, as I have said, not on the beaten track, and has therefore remained to some degree solitary and unobserved by travellers from other lands. It has dwelt apart. Whether or no the cause of its isolation can be traced to its political history, or can be attributed to the constant state of revolution which reigns in the country, affords a fruitful matter of speculation and conjecture. A possible cause of the neglect displayed towards Venezuela by tourists is afforded by the fact that whilst it is full of picturesque scenery and objects of interest to the Geologist, the Natural Historian and Men of Science in general, it does not possess any spectacular wonders of nature like those which draw sightseers of both hemispheres to gaze upon the Falls of Niagara, or to form

rings around the massive girths of the big trees of California.

Venezuela was discovered by the Spaniards towards the end of the 15th century. In the year 1499, the Spanish, on landing on the borders of the Lake of Maracaibo, perceived some little wooden huts raised upon piles in order to protect them from the stagnant waters which covered the plain. It is for this reason that they gave to the country the name of Venezuela, which means "Little Venice."

At the beginning of the 16th century, in 1521, Charles the Fifth of Spain ordered the Colonial Government, then established in Venezuela, to reduce to a state of slavery all the Indian tribes who dared to resist the Spanish Conquest. It was in this manner that Venezuela passed entirely under Spanish dominion.

We will now pass on from the 16th century to the beginning of the 19th. It was in the year 1806, the most interesting year in the annals of Venezuelan history, that the Spanish Colonists, smarting under the oppression of the tyrannical Spanish Government, and encouraged, without doubt, by the example of the French Revolution and the great struggle crowned with success of the North-American Colonists against England, resolved that they also would free the land of their birth from the crushing insupportable yoke of Spain. The history of this epic struggle is altogether extraordinary.

Imagine for a moment a little band of men, "men in their shirts," badly armed, pitted against a great European Power, and realize that it was that same little band of men who, after long years of terrible suffering and privation, triumphed over all the forces that the then rich and powerful kingdom of Spain could put into the field. It was on the 5th of July, 1811, that the first Venezuelan Congress proclaimed their independence, and on that day was born the American Confederation of Venezuela.

The three most famous men who took part in the War of Independence were Francisco Miranda, José Antonio Páez, and Simón Bolívar. General Miranda is, perhaps, more interesting to French people than to the English. He played an important rôle in the French Revolution. He passed a long period of captivity in the Conciergerie and was liberated the same day that Robespierre died on the Scaffold. To-day one may read his name, written on the Arc de Triomphe in Paris, among the names of the great generals of the first Napoleon. Miranda

was the type par excellence of the Spanish adventurer: the soldier of fortune. Men who, armed with grit, intelligence and energy, have gone forth to conquer new worlds. Miranda, after spending some time in the United States, where he became the intimate friend of Washington and of Lafayette, turned his attention for a time to the old world, where his conquests proved to be numerous and varied. It is said that while in Russia he became one of the many favourites of Catherine II. Miranda left his country with scarcely a penny in his pocket, and with very little influence outside his own land. After a visit to the United States he went to Russia where, shortly after his arrival, he obtained a commission in the Russian Army. From Russia he went to France, where he took an active part in the French Revolution and also in repelling the Austrian invasion. After the Revolution England offered him a commission in the British Army in Spain. This offer Miranda refused, saying that he would never take up arms against his French comrades. Animated by the great ideal which caused the French Revolution,—the love of liberty,—animated also by the example of the North Americans, he returned to his own country resolved to win for his native land independence and liberty.

One can call General Paez the de Wet of the Venezuelan War of Independence. His genius for strategy was quite as remarkable as that displayed by the Boer General in the South African War. He passed his time playing a colossal game of bluff with the Spanish forces. On many historical occasions he has, with about two hundred men, succeeded in making the enemy believe that he had many thousands.

Bolivar, as without doubt you know, is the George Washington of South America, for he not only freed Venezuela from Spanish dominion, he also bestowed freedom on four other Republics—Colombia, Peru, Ecuador and Bolivia.

I now wish to draw your attention to a sad and curious fact, examples of which can be found in the history of many other countries.

Of these three men who had sacrificed all they possessed to obtain the freedom of their beloved country not one of them ended their days in comfort or tranquility. In each case was the blackest ingratitude meted out to them. Miranda was allowed to die miserably in a Spanish prison. Paez, exiled from his native land, ended his existence humbly, almost wretchedly, in the great City of New York. In a square in

Caracas there is a statue raised to the memory of General Paez. This statue was made in Germany and brought over to Venezuela at an enormous cost. When I look at it I always think of a little story I once heard in connection with the poet Burns. A short time after the poet's death his old mother was informed that in a certain Scotch town a statue had been raised to the memory of her son. "Alas!" was her only comment, "Alas! he asked for bread and they gave him a stone."

Simon Bolivar, the Liberator of a Continent, the founder of five Republics, towards the end of his life, entirely worn out by the ingratitude of his countrymen, gave up the struggle against those who slandered his love of liberty and his patriotic devotion. He had been accused of ambition for power and of the most selfish designs. Even the wild notion of aspiring to monarchy, entertained by a handful of people and which he had strenuously repressed, had been brought against him. He was treated in the basest manner by the very people for whom he had sacrificed his large private fortune and had spent twenty years of his life in constant warfare to gain their liberation. He retired in failing health to Santa Marta, a little seaside village in the Republic of Columbia, where he died broken hearted on the 17th of December, 1830. They buried him in a shirt borrowed from one of his few devoted followers, General Silva. The following verses are a tribute to his memory. They are written by a Manchester man, Mr. Peter Spence, the father of a late member of the Manchester Geographical Society.

"And he has gone from earth, the mighty man
Whose potent arm was freedom's own,
Who found his country prostate-prone
Beneath the hoof of tyranny, and wan
With suffering; but in her eye there shone
A gleam of vengeance which he oft would scan,
A silent menace which told, that, alone
Her single nervous arm would make her tyrants groan
He raised the war cry where the Andes vast
Re-echoed to the sound, and, on the plain
Where laves the Orinoco in the main,
Colombia's children roused, as does the blast:
He led them on to battle, and though cast
In many a Combat, led them not in vain."

I should like, before passing on to other matters, to give you a short description of the battle of Carabobo, the battle that shattered for ever the power of Spain in Venezuela. This description is also a slight tribute to the memory of that gallant little band the British Legion, formed of men, who, in the sacred cause of liberty, shed their blood for an alien land, and whom Bolivar called "the Saviours of his Country."

In 1821 was fought the decisive battle of Carabobo which gave Venezuela to the patriots. The plain of Carabobo could only be approached by the defile of Buena Vista, whose outlet was commanded by the Spanish artillery, backed by strong masses of infantry in two lines of battle, and supported on their flanks by strong bodies of cavalry. The Spaniards had 9,000 men. Bolivar had 6,000. The Royalist position seemed impossible of attack. It was determined, therefore, that Paez should go by a path, dangerous and little known, and attempt to turn the enemy's right. The path wound round from the road to San Carlos, through a ravine so full of briars that the men had to pass in single file through it. The Royalists discovered the movement of Paez just as his men entered the ravine, and four of their best battalions were directed against him. Unable to withstand this terrible charge, the soldiers of Apure gave way, and it was only by the gallantry and coolness of the British Legion that the fortunes of the day were ultimately turned in favour of the patriots. Filing off under tremendous fire they formed a battle array and, kneeling down, withstood every effort to dislodge them. Not an inch would they yield, although nearly all their officers were killed or wounded. Their desperate resistance gave time to the battalion of Apure to reform. Reinforcements under General Heras and the famous body-guard of Paez now came on the scene of action. The Royalists, attacked front and rear, were utterly routed and pursued to Valencia, from which town, with the shattered fragments of his host, the Spanish Commander-in-Chief, General La Torre, withdrew to Puerto Cabello. On the field of Carabobo the power of Spain in Venezuela gave up the ghost, and this victory bestowed upon the Venezuelan people the liberty for which, during long years, they had suffered and bled. To Englishmen it should be a source of gratification to think that their countrymen had helped to obtain the precious dower of freedom for those people in whom all the force and oppression of Spain had been unable to extinguish those

patriotic virtues which form the basis of all good and free nations.

I am always astonished by the manner in which the majority of people ignore the great republics of South America, and particularly Venezuela. It is only since the time that Argentina, Chili and Brazil have begun to purchase huge battleships that the *civilized* world have begun to believe in the progress of these three countries. Unhappily, perhaps, for Venezuela, her navy is not her strongest point. She possesses, I believe, about eight gun-boats and about eighty cannon. Nature, however, has provided her with ample means of defence in case of invasion. Mr. James Spence, a man who travelled extensively in Venezuela, was once asked if Venezuela would be a country easy to invade. This is what he answered: "The military system of the country is composed of a National Militia to which each State is bound to furnish a contingent. The long Venezuelan coast-line, with its many ports and its splendid stretch of ocean, would be impossible to protect had not Nature traced out three lines of defence presenting almost insurmountable difficulties in the way of the invader. Three zones of mountains, plains and forests, offer three stages of resistance scarcely to be overcome. The first contains almost all the principal towns and military forts which, in *all* their extent, an enemy could not possibly occupy. The second produces horses and men unrivalled for cavalry and guerilla bands. The third is the refuge afforded by dense woods now inhabited only by friendly Indians." "There is," he continues, "not the slightest chance of Venezuela being invaded, but should such a thought enter into the head of emperor, king, or president, the consideration of these natural features and the invincible valour of her sons, displayed not only in the glorious war of Independence, but also, alas! in a generation of unhappy civil strife, would show the madness of the enterprise."

As I have said before, I have often marvelled at the ignorance displayed by people otherwise fairly well informed as to the geographical position of Venezuela. I have often been asked on which side of Panama is Venezuela situated. Imagine such a question! A country which possesses one thousand miles of coast line, that is only twelve days' journey from the principal countries of Europe, and a few hours from Trinidad.

Venezuela is washed on the north by the Caribbean Sea; on the north-east by the Atlantic Ocean. It is limited on the east

by British Guiana; on the south by the Brazilian provinces of Altos Amazonas, and on the west by the Republics of Colombia and Ecuador.

Figures fail to convey any idea of geographical dimensions, therefore when I say that Venezuela covers the same extent of superficial area as France, Belgium, Holland, Denmark, Switzerland, Portugal, including the United Kingdom of Great Britain and Ireland, you may perhaps form a just conception of the magnitude of this vast territory. Its immense coast line, extending over one thousand miles, is indented by thirty-two ports, fifty bays and creeks, and the gulfs of Maracaibo, Paria, Coro, Cariaco and Santa Fé. There are seven capes, seven peninsulas and seven straits. The peninsula of Paria on the Boca de Dragon strait is the point where Columbus first landed on the mainland of the American Continent. Seventy-one big islands and a great number of smaller ones belong to Venezuela. The most important is the island of Nueva Esparta, more familiar, perhaps, to Europeans under the name of Margarita. There are extensive pearl fisheries around this island. Oh the beauty of some of those islands! They are like the islands of which Tennyson speaks, where

"Droops the heavy blossom'd bower,
Where hangs the heavy fruited tree—
Summer isles of Eden lying
In deep purple spheres of sea."

Three ranges of mountains cross the country. *The range of the Andes* forms a compact mass rising in the Sierra Nevada to a height of 15,127 feet and sweeping down to the lake of Maracaibo on the north and to the plains of Barimas on the south. *Naiguatà*, supposed to be 9,181 feet high, is the highest peak in the *Coast range*. The first man to scale this mountain and reach its summit was Mr. James Spence. The coast range encloses the rich valleys of Aranga and Caracas, and appears to be connected by a submerged chain with the islands opposite the coast. *The Parima Range* runs from east to west and rises in peaks, often interrupted by table lands, attaining its highest altitude of 8,228 feet in Maraguaca.

Venezuela is beautifully watered. Besides the great lake which might be termed the Sea of Maracaibo, and the immense

lake of Valencia, there are two hundred and four smaller lakes. There are sixty rivers, all of considerable size, eight of which are of the first magnitude.

The Orinoco, the second great river of South America, has its chief source on the west of the Sierra Nevada. Rising in the great province of Guayana, whose capital, Ciudad Bolivar, is the commercial centre of the surrounding districts, the Orinoco runs its course from west to east, from south to north, and then from east to west, through nearly the whole of the central part of Venezuela. Near the village of Esmeralda the Orinoco divides into two streams. One of these runs in a southward direction and joins the Rio Negro, which, after a course of five hundred miles, falls into the Amazon in Brazil. It is possible to follow this single body of water for considerably over four thousand miles.

The climate of Venezuela varies in different parts from the cold of winter to the fiercest summer heat. The towns of Maracaibo, Puerto Cabello, La Guayra and Ciudad Bolivar can be classed as the hottest places under the sun. In contrast to them the towns of Merida, Trujillo and San Carlos, in the Cordillera of the Andes have a cold climate and the mountains by which they are surrounded are covered with snow and ice all the year round. The country can be divided into three zones of temperature. The cold, the temperate and the warm districts. From the level of the sea to the height of 3,000 feet, the climate is tropical; from that to 7,000 feet it is temperate; whilst above this height it is cold, and in the Cordillera of the Andes snow and ice eternally reign triumphant.

Augustin Codazzi, the eminent Italian geographer, has divided Venezuela into three zones—agricultural, pastoral and forest land. As the pursuits of the people are in accordance with this natural indication, the country offers to the observant traveller three stages by which nations arrive at civilization. The first zone includes the Andes and the coast range of mountains. It extends from the State of Tachira to the gulf of Paria. On one side it is washed by the Caribbean Sea, while its southern parts slope gently towards the Savanna. This zone contains all the commercial ports and a greater part of all the land under cultivation in the Republic. It includes cold and desert “páramós”; highlands destitute of vegetation; elevated valleys yielding fabulous crops of wheat and potatoes; lower valleys covered with sugar cane, indigo, coffee, cotton and

cocoa. It embraces within its area virgin forests and immense tracks of land bountifully watered. The second zone, the pastoral zone, extends from the foot of the Cordillera of the Andes to the delta of the Orinoco, and from the base of the mountains in the State of Bolivar to the river Meta. Here are to be seen the Savannas or Uaños, as they are called in Venezuela, immense plains, some perfectly clear, some covered with brushwood, some with oases, and others again without a single tree. From these levels rise tablelands, surrounded by streams which, in the rainy season, inundate all the lowlands. When the waters subside these become rich pasture lands. Cattle breeding is carried on in these level tracks. Pasture farms and villages are sparsely dotted over this immense district, and here and there a town springs into life. The third zone, that of forest land, extends from the plains to the frontiers of Brazil and Colombia. Here are rivers whose black waters are devoid of insect life; rivers of clear water, swarming with animal life: rivers that are rushing torrents bordered by gloomy forests alive with wild beasts. Forests whose darksome shades have never been penetrated by a white man's foot and where the songs of the countless birds fall only on the Indian's ear.

Venezuela, up to the present, has been entirely an agricultural country. Her exports consist of coffee, cocoa, rubber, hides, cotton, tobacco, sugar, rum and indigo. The ports of Maracaibo, Puerto Cabello and Ciudad Bolivar, export an ever increasing amount of live stock. The export of cattle is increasing by leaps and bounds, and will, without doubt, in the near future, form the chief source of wealth of the country. There are no great manufactures in Venezuela, and the mechanical arts are only in their most rudimentary form. It is for this reason that often when I have heard Venezuelans lament the fact that foreign capitalists will not venture to establish themselves in Venezuela because they are afraid of the constant state of civil war which reigns in the country, it has always seemed to me that it is not capitalists that are so much wanted as artisans. Skilled workmen of every description are needed in Venezuela. The gratification of the desires arising from a higher civilization will prove a strong stimulus to action: food and shelter are not the only things requisite to give happiness to a refined and educated people, they are merely the lowest of their cares; it is in the exercise

of intellect, in the cultivation of the arts, and in the consequent expansion of the mind, that they find their best pleasures. To replace the excitement of war and strife by the not less keen struggles of commerce and industry, and to teach that peace has her victories not less than war, would be to confer a lasting benefit on the Venezuelan people. Thousands of sweated, down trodden men and women living on the border line of starvation in the overpopulated capitals of Europe would find in Venezuela smiling fertile valleys ready to receive them and give them health, ease and plenty. Instead of the cold solitudes emigrants have to encounter in places like Canada, they would in the Republic meet with warm friendship and hospitality, and their influence in return would have a salutary effect in checking civil outbreaks, absolutely the only drawback to the prosperity of the country which possesses all the boundless fertility and loveliness associated in our minds with the lost Paradise. No richer soil exists, and with peace, capital and labour it might become one of the principal food producing centres of the world.

Caracas is to-day a town of 100,000 inhabitants. It possesses a glorious climate—a climate that is eternal spring time. The town is situated 3,000 feet above the level of the sea. It was founded in the charming and fertile valley of Aragon by Diego Lozado, Spanish adventurer, the conqueror of Venezuela. In 1812 the town was completely destroyed by an earthquake in which thousands of people perished. After the catastrophe it was rebuilt on a more regular plan. In latter years, owing to continued civil outbreaks, Caracas has been somewhat neglected and its streets and public buildings have not been too well looked after. To the not too critical eye, however, the town presents a very picturesque aspect. The houses are painted all colours, pale blue, pale green, pink, cream and dazzling white. There are trees and flowers in profusion. There are many fine squares, ornamented by fountains and palms, where every evening the élite of Caracas go to listen to music. The Cathedral was built 400 years ago by the Spaniards. It is interesting to note that this is one of the few buildings which resisted the terrible earthquake of 1812. It is a remarkable fact that the buildings which have been constructed by the Spanish in Venezuela have in general resisted the most severe earthquakes; while the modern edifices which have been guaranteed earthquake proof are generally the first to fall.

Caracas is the seat of a University. There are several institutions of public instruction. There is also a Pasteur Institute and a modern and well equipped hospital. There are no very important manufacturies in Caracas. There are, however, a few soap and tobacco factories, some important tanneries; hats and boots are also largely manufactured. Caracas, on the other hand, possesses a large export trade, principally in coffee, cocoa and hides. Her trade with the interior in European goods and articles of luxury is very considerable.

The Federal Palace in Caracas contains a fine reception hall decorated with very beautiful frescos painted by Venezuelan artists. There is an interesting fresco of the British Legion holding the defile in the war of Independence.

The Capitol, a handsome massive building of the Doric order, was erected in ninety days for the Legislative Body to hold its sessions. The Casa Amorilla or Willow House is the official residence of the President.

The Venezuelan women are often very beautiful, and there is a reason for this. Nearly all the Spanish colonists who settled in Venezuela came from the province of Andalucia, and, as you know, the loveliest women of Spain are to be found in Andalucia. The easy conditions of life for women in the Republic have fostered and even improved those natural charms.

The national sport of Venezuela is bull fighting. You must note that in Venezuela horses are never allowed in the ring. The combat lies entirely between the man and the bull. The "sport" is really not one whit more cruel than fox hunting or stag hunting. To my mind it is just a little less cowardly, for the man who faces the bull often risks his life, which can scarcely be said of the bevy of men, horses and dogs which chivy to its death a wretched little fox.

Ciudad Bolivar seems destined to become one of the great emporiums of the world, from its position on the Orinoco, which river with its tributaries joins the mighty Amazon in Brazil, thus forming a network of water ways through the heart of the South American Continent.

The government of Venezuela is a federal Republic. The separate states of the Union have joined together to form a nation but they retain all sovereign power not expressly delegated to the General Executive. They are bound to defend the

integrity and independence of the Union, to organise themselves on a democratic basis, and to submit to the ruling of Congress or other Federal Authority in cases of dispute.

Before the year 1854 slavery existed in Venezuela. 20,000 African slaves were brought into the country by the Spaniards. In 1854 the slaves were freed under the presidency of General Monagas.

The law makes no distinction between races. In Venezuela a man is recognised as a man more frankly perhaps than in any other land. Negros, whites, half-castes and Indians sit side by side in the jury box and cast equal votes in the ballot box. Another point in favour of the Venezuelans is their absolute religious tolerance. The Catholic religion is regarded as the religion of the State, but there is not a trace of fanaticism, and all cults can be freely exercised.

Venezuela is a vast treasure house of mineral wealth, and many great fortunes of the future lie hidden in her soil. The immense development of the United States in the 19th century was largely due to the exploitation of the deposits of coal, iron, gold, silver and mineral oil. Similar natural deposits are lying around as yet unappropriated in every province of Venezuela. For many years the mineral wealth of the country has remained utterly unexploited. In 1850 rich gold deposits were discovered in the province of Guayana. Some years ago tin was discovered and exploited in Barquisemeto, but in later years the mines have been abandoned. The copper mines of Acoa, once the property of General Bolivar, were sold by him to raise funds to carry on the war of Independence. They were bought by an English joint stock company, then called the New Quebrada Co. Limited. They are now, I believe, known as the Bolivar Railway Co. Limited. In the provinces of Carabobo and Merida are to be found deposits of copper, coal and salt still unexploited. In the Cordillera of the Andes granite and marble exist in great abundance.

You can now judge for yourselves the wonderful possibilities of this country, this vast territory containing wealth beyond the dreams of avarice, and possessing only 3,000,000 inhabitants. Here in this land there is a place in the sun for every one. Poverty exists certainly, but the misery, the black terrible misery that one sees every day in the streets of cities like Manchester and London is quite unknown in this South American Republic. In this sunny land no one ever dies of

starvation. Children are never abandoned. Premeditated crime does not exist and robbery is almost unknown, and yet I have often been told that Venezuela is a country without progress, without morals, in fact a place hardly civilized at all.

In the dawn of her existence as a Republic, Venezuela played a magnificent rôle. It was she who held aloft the torch of liberty. The torch whose rays dissipated the sombre shadows of tyranny which hung heavily over the southern portion of the New World. In latter years, alas! there are times when one thinks that she has forgotten her glorious birth.

But we Venezuelans have faith in our land and we have faith in our future. For many weary years our country has suffered from bitter internal strife, but we are waiting patiently for that brighter day when:—

“ There where the fresh turned fallow runs and the deep soil
glistens red,
We will repair a wrong that was done to the living and the
dead.
There where the senseless bullet flew and the barren shrapnel
burst,
We will plant a tree, we will dig a well against the heat and
the thirst.
There in a broad and sunlit land, where no wrong bites to
the bone,
We will lay our hands in our neighbours hands and together
we will atone
For the set folly and the red breach and the black waste of
it all.”

With a lasting peace which would enable those who will to work to-exploit the hitherto untouched resources of the country, Venezuela might become second to none of the great republics of South America.

And now I will close my address, but before doing so I must tell you that if there be any among you to-night who would taste the true joy of living, let them go to those sunny lands of the South where they will meet a simple warm-hearted people, where they will find a sky that is always blue, where the bitter cold of the Northern winter is never felt.

There they will find a peace and tranquillity of mind not to be found in the old, grey worn out centres of Europe.

An eminent man of science, Professor Wallace, who spent

many years of his life on the Amazon river, said that "the superiority of the bleak North to tropical regions is only in its social aspect, for I hold to the opinion that although humanity can reach an advanced state of culture only by battling with the inclemencies of Nature in high latitudes, it is under the equator alone that the perfect race of the future will attain to complete fruition of man's beautiful heritage, the earth."

Review.

"Travel and Exploration." Monthly. London: Wetherby and Co.

A remark let drop recently by our secretary suggested to us that we should without delay seek out our librarian. We did so, requesting him to let us have the last three issues of a certain magazine, which we presumed to be little known to our members, and about which we were prepared to put on record a few notes, rightly merited we think, and provide some pleasant reading for those of our members—not a few we dare to suggest—who would wish a little diversion from the present overwhelming subject of politics—momentous enough, but not rightly all-absorbing. Knowing full well the very limited number—we say it with regret—who use our library, we were a little surprised to be told we could not have what we wanted. To "Travel and Exploration" we refer. This excellent magazine has just attained its first birthday. From the first number its publishers have supplied our library with a copy. It has lain on the table of our Members' Room, and its pages have been eagerly, regularly, and closely combed by the Room's habitués. We have termed it an excellent magazine. It is. It animates an increased love for geography, and in the interest of geography we should like to see its sphere of utility extended with us. Geographical journals have, generally, the tendency to give prominence to the drier side of the science, satisfactory enough to those who take their geography seriously,—but perhaps a little uninteresting to those who do not make a study of it, and who, as a result, do, we think, oftener than not pass by the more scientifically-erudite articles unread. There would therefore appear to be need for a stepping-stone from the lighter side of geography to its more serious, and we believe this magazine provides this. Its range of subject is universal. We take, for instance, the first one coming to our hand of the six numbers which lie before us. Here are its contents: Unexplored Central Africa (Col. Sir T. H. Holdich, K.C.M.G.); Constantinople (Capt. Shaw); Herr Durnburg's Tour in South Africa; Over the Anti-Taurus from Adana (Capt. Townshend); The British Emigrant in Canada—The Brighter Side (the second article of a series); In the Shadow of the Matterhorn. Concluding with notes on travel literature; geographical news of the moment; tourist travel; and this number touching on matters aerial. In another number we are, of course, with Sir E. H. Shackleton in "The Heart of the Antarctic." This, though very brief, goes some way to proving its comprehensive geographical range. The articles are written in a bright and interesting manner. They are printed in good readable type, and beautifully and copiously illustrated from actual photographs. It is a magazine we commend to the notice of our readers.

W. H. W.

Proceedings of the Society.*

January 1st to March 31st, 1909.

The 809th Meeting of the Society was held on Tuesday, January 5th, 1909, at 7-30 p.m.

In the chair, Mr. F. Zimmermann.

The Minutes of the Meetings held on December 15th and 22nd were approved.

The Election of Messrs. Oscar Samson, H. Green, B.A., and Dr. John Sutcliffe as Ordinary Members was announced.

Councillor Henry Hibbert, F.R.G.S., gave an address on "The Pyrenees and Spain." The interesting account which he gave of his journey was illustrated with some very fine coloured lantern slides, enlivened now and then with some delightful cinematograph views, which brought the country vividly before the Members present.

The Chairman moved that the thanks of those present be given to Councillor Hibbert for his address and for the splendid manner in which his remarks had been illustrated with the lantern and cinematograph views. The Members carried the Motion with acclamation.

The 810th Meeting of the Society was held on Saturday, January 9th, 1909, in the form of a Party for the Children of the Members.

The Victorians received their guests at 5-30 p.m. and Musical and other games occupied the first hour.

At 6-30 p.m. some lantern views, lent by Mr. Payton and Mr. John R. Smith, followed by a few comic views, were shown. Afterwards games were again indulged in, light refreshments being served, under the kind supervision of Mrs. Harry Sowerbutts, in the Members' Room from 7 p.m. to 8 p.m.

At 8 p.m. Father Christmas (Mr. T. W. Sowerbutts on this occasion), with an ample supply of suitable gifts in his sack, made his appearance and, after a procession round the room, each child was presented to him and received a toy as evidence of the reality of his visit.

At 9 p.m. a set of "Peter Pan" slides, kindly lent and described by Mr. G. H. Warren, were shown, the exhibition concluding with some more comic slides.

After another twenty minutes of games and dances, a very successful and enjoyable evening concluded.

* The Meetings were held in the Geographical Hall, unless otherwise stated.

The 811th Meeting of the Society was held on Tuesday, January 12th, 1909, at 7-30 p.m.

In the chair, Mr. F. Zimmern.

The Minutes of the Meetings held on January 5th and 9th were taken as read.

The Election of the following Members was announced:—
Ordinary: Messrs. N. Abbott, B. Barrow, J. Herbert Cooke, W. Gatwood, W. Jones, C. Pilkington, J.P., W. Scott, Salis Simon and E. D. Steele; Associate: Miss Ruth Bentley.

Mr. Harold E. Young gave a Lecture entitled "A Wayfarer in Rural Japan." The address was illustrated with original lantern slides, and described his travels in Japan after the close of the great war. He tramped, rode, and caravanned through the country, seeing the real Japan. His lecture and his lantern slides alike were a disillusionment to his audience. Rural Japan is not the Japan as Japanese artists try to make us believe it is, and we have not been told the truth by the travellers who have merely visited the treaty ports. Japan is not a land of unbroken fine weather and bright colour, pretty geisha girls and romantic tea houses.

Neither the Japanese scenery nor the Japanese girls can compare with the British products. The geisha girls are good, but not good looking. The Japanese men are not small men—they are sometimes big, and are always broad-shouldered men who can carry or draw loads, that the average Briton could hardly move, at a good pace for many miles. Japanese country inns and tea houses are not too clean, and the Japs are as indifferent to sanitary precautions as they are enthusiastic "tubbers" in dirty water. For the patriotism of the Japanese Mr. Young had nothing, however, but praise.

Mr. M. W. Thompstone moved, Mr. C. A. Clarke seconded, and it was unanimously resolved that the hearty thanks of those present be given to Mr. Young for his very interesting lecture.

The 812th Meeting of the Society was held on Tuesday, January 19th, 1909, at 7-30 p.m.

In the chair, Mr. Harry Nuttall, M.P., F.R.G.S.

The Minutes of the Meeting held on January 12th were taken as read.

The death of a Member of the Council, Mr. G. T. Bowes, was mentioned, and it was resolved that the sympathy of those present be conveyed to his relatives.

The Election of Mr. Joseph Lunn as an Ordinary Member and Miss L. Kay and Mr. H. F. Kelley as Associate Members was announced.

Mr. A. R. Colquhoun, F.R.G.S., gave a lecture on "Bosnia and Herzegovina," first dealing with the Balkan Question generally. The address was illustrated with lantern views.

Mr. F. Zimmern moved, Mr. J. Howard Reed seconded, and it was unanimously resolved that the sincere thanks of the Meeting be given to Mr. Colquhoun for his interesting address.

The 813th Meeting of the Society was held on Tuesday, January 26th, 1909, at 7-30 o'clock p.m.

In the chair, Mr. F. Zimmermann.

The Election of the following Ordinary Members was announced: Rev. J. E. MacRae, M.A., Messrs. W. M. Reekie, W. Robinow, and A. V. Sharratt.

Mr. Edmund Cousins gave an account of his residence in "Peking," illustrating his address with some unique Lantern Slides of the town.

Mr. D. A. Little moved, Mr. H. Forsyth seconded, and it was unanimously resolved that the thanks of the Meeting be accorded to Mr. Cousins for his very interesting address.

The 814th Meeting of the Society was held on Tuesday, February 2nd, 1909, at 7-30 p.m.

In the chair, Mr. F. Zimmermann.

The Minutes of the Meeting held on January 26th were taken as read.

The Election of the following Members was announced:—Ordinary: Messrs. F. Mills, E. Roose Evans, A. S. Robinson and Alex. C. C. Somers, LL.B.; Associate: Mr. Lewis B. Barton.

Dr. J. Johnston gave an address entitled "Morocco and the Moors," descriptive of his journey, being illustrated with original Lantern Slides. A Moorish Costume was exhibited.

On the proposition of the Chairman a hearty vote of thanks to Dr. Johnston for his interesting address was passed unanimously.

The 815th Meeting of the Society was held on Tuesday, February 9th, 1909, at 7-30 p.m., and constituted the third and last joint Lecture arranged with the Manchester Branch of the Cyclists' Touring Club.

In the chair, Mr. George Ginger.

Mr. W. Fitzwater Wray ("Kuklos" of the *Daily News*) gave a Lecture entitled "After Stevenson through the Cevennes: A Cycling Pilgrimage." The address was illustrated with original Lantern Slides.

The Chairman moved a resolution of hearty thanks to the Lecturer for his intensely interesting address and it was passed unanimously with acclamation.

The 816th Meeting of the Society was held in the Free Trade Hall on Friday, February 12th, 1909, at 7-30 p.m.

In the chair, Mr. Harry Nuttall, M.P., F.R.G.S., supported by the following Members of the Council, Mr. F. Zimmermann, F.R.G.S., Rt. Rev. Bishop Welldon, the Vice-Chancellor of Victoria University, Messrs. J. Howard Reed, F.R.G.S., and S. Simon, Swedish Vice-Consul, Prof. T. H. Core, Messrs. D. A. Little, H. Woolley, F.R.G.S., S. Oppenheim,

J.P., J. E. Bahner, F.R.G.S., C. A. Clarke, C. Collmann, G. Ginger, N. Kolp, J. McFarlane, M.A., T. C. Middleton, J.P., F. S. Oppenheim, R. C. Phillips, J. S. Reid, T. W. Sowerbutts, E. Steinthal, Geo. Thomas, Harry Sowerbutts, and others.

Mr. Harry Nuttall, in introducing Dr. Sven Hedin, referred to a meeting in the Manchester Town Hall eleven years ago, when Dr. Hedin addressed the Manchester Geographical Society on the return from his first great journey in Central Asia between 1894 and 1897. Since then he said they had followed the life of this great explorer with never failing interest, and now they had the great pleasure to welcome him after his third and greatest expedition. They believed that the results of this journey was the crowning work of all his great efforts.

Dr. Sven Hedin, Gold Medallist of the Royal Geographical Society, gave a Lecture descriptive of his third and last journey "Through Unknown Tibet." (See p. 1.)

The address was illustrated with a large Wall Map, and with Lantern Slides made from Dr. Hedin's photographs and drawings. These gave a vivid idea of the wastes of snow and rock traversed by him. Dr. Hedin is an accomplished artist, as was proved from the drawings shown as slides—indeed, Dr. Hedin always preferred to draw a scene rather than to photograph it.

The Society is indebted to Mr. E. W. Mellor, J.P., F.R.G.S., for kindly exhibiting the Slides by means of his powerful Electric Lantern.

On the motion of the Rt. Rev. Bishop Welldon, Dean of Manchester, who spoke of the humanity which characterised the explorer's journey, seconded by Mr. F. Zimmermann, F.R.G.S., a hearty vote of thanks to Dr. Sven Hedin for his intensely interesting address was passed by the 2,400 Members and others present.

After a suitable response from the Lecturer, on the motion of Mr. J. Howard Reed, F.R.G.S., the thanks of the Meeting was passed to Mr. Harry Nuttall, M.P., F.R.G.S., for his services in the Chair, and to Mr. E. W. Mellor, J.P., F.R.G.S., for his services with the Lantern.

RECEPTION OF DR. SVEN HEDIN AT THE UNIVERSITY.

In order to complete this record of Dr. Hedin's visit to Manchester, the following Report is here inserted:—

Dr. Sven Hedin, who on Friday had told the story of his latest explorations in Central Asia to a crowded audience in the Free Trade Hall, paid a visit to Manchester University on Saturday morning. It had been arranged that he should be received by the Senate and the Council of the University and the members of Convocation in the Council Chamber, and that he should then give an address in the Whitworth Hall. The undergraduates determined to give him a reception on their own part, and Dr. Sven Hedin, as he afterwards declared, thoroughly appreciated it. He arrived at the University a little after eleven o'clock and found the great quadrangle crowded

with men and women students. Dr. Sven Hedin was accompanied by his sister, Miss Hedin, and his host, Mr. Harry Nuttall, M.P. When the motor-car in which they rode had got through the gates of the University it was besieged by cheering and enthusiastic young men. Many clambered upon it, and it was with some difficulty that the distinguished traveller alighted. He was at once seized by the shouting throng, and, shoulder high, carried round the "quad." Such an enlivening scene has perhaps never occurred before in the precincts of the University. Dr. Hedin entered into the spirit of the welcome, laughing heartily and waving his hat in recognition of the tumultuous cheering. He was finally set down at the foot of the stone steps leading to the Council Chamber, where he arrived in a somewhat breathless condition.

"In the Council Chamber the University authorities, wearing cap and gown, were present in large numbers, and Dr. Sven Hedin was addressed in their name by the Vice-Chancellor (Dr. Alfred Hopkinson). 'I desire,' he said, 'on behalf of my colleagues of the Senate of the Council to give you a hearty welcome to the University of Manchester. The students have already, in their own way, expressed their welcome to you. I am quite sure I am speaking on behalf of every member of the University in saying that we give you our most hearty congratulations on the great success of your voyages and discoveries. You have rescued from the world unknown a whole territory and added it to the world that is known.' In the interests of science and of knowledge (Dr. Hopkinson proceeded) they regarded that as a great achievement. The discoveries Dr. Hedin had made were of great moment to those who were interested in geographical study. They had at that University a lecturer taking a geographical department, and it was a department they hoped to see very much developed. Dr. Sven Hedin's discoveries at the sources of the Indus and the Bramaputra were not only of interest to us geographically, but they were of interest to the historical student.

"He wished to add, on behalf of those who had the pleasure of hearing Dr. Sven Hedin on Friday night, how well they could understand now how he had been able to go to Tibet, to attach to himself those who were his followers and his devoted friends from the beginning to the end of his journeys, and how perhaps the people of Tibet were charmed with his presence, and enabled him to achieve great results without friction or serious trouble, but, he was glad to say, with pleasure and convenience to himself.

"Dr. Sven Hedin, in reply, said he thanked them for the welcome he had received from the University of Manchester, even from his very entrance into the gates. He felt it a very great honour to be received there, and he regarded as an encouragement for the future the knowledge that men understood the meaning of his journeys. Although he had been travelling for twenty-four years in Asia he had always had some special aim in view. In the matter of such investigation great nations held different views, and some of the great nations of the earth had political objects in contemplation. It was

pleasant for him to feel, however, that in the province of science there were no different nationalities. Science—whatever kind of science it might be—was always international, and he was very happy to feel that he was understood in this great and powerful country as well as in his own country.

“ Dr. Sven Hedin then signed the visitors' book, and the whole party proceeded to the Whitworth Hall, where the students, who crowded the fine building, again welcomed their guest with the singing of ‘He's a jolly good fellow.’

“ The Vice Chancellor, who presided, said the University had welcomed two other great explorers, Nansen and Scott, whose work lay in the extreme north and the extreme south. Dr. Sven Hedin had explored an unknown region in the very centre of the globe. They knew from what they had seen on the previous evening that he was a good draughtsman, and he had kindly promised to give them an evidence of it by making a drawing or sketch. He hoped it would be treasured in the new Union buildings alongside of the sketches made by Dr. Nansen and Captain Scott. They not only welcomed him as a brave man, an explorer, and a man of science, but also for the sake of the country to which he belonged. Although we wished to be at peace and on good terms with all the world, we had an especial attachment to the Scandinavian countries, from which our forefathers came.

“ Dr. Sven Hedin, who was loudly cheered, described his earlier journeys in Central Asia. Twenty-four years ago, he said, he took the position of tutor in a Swedish family at Baku, and it was there that he began his studies in the geography of Asia. He went through Persia, and subsequently through Russia and the Ural Mountains, Bokhara, and elsewhere, and it was during that period he prepared for the first great expedition he had been planning into the very heart of Asia. That journey was begun in 1893, and occupied four years, during which he traversed the Pamirs, ‘the roof of the world,’ and visited Kashgar. He had heard, as had many other travellers before him, the legends and tales of people living round the great desert—tales of bygone times and of cities buried in the sands. ‘I got it into my head,’ Dr. Hedin said, ‘that before anything in the world I would cross the desert, and see if it was possible to find any traces of that civilisation individuals were talking about.’

“ In graphic terms, which were listened to with an intense interest, Dr. Sven Hedin described how he set out with a caravan of camels and only four servants. They took an insufficient supply of water, and the animals and the men died till he had one man left. It was in the month of May and rather hot, and they were unable to walk in the daytime. They could, he said, imagine the desert—an open sea of sand dunes, moving when there was wind, and when there was not ‘silently dead.’ Some of the dunes were two hundred feet in height, and these had to be climbed. In these vast solitudes there was no sign of organic life—not a fly, not a leaf, not a straw of grass driven by the wind. The sun was hot, and when the morning

came he and his servant undressed, dug down into the sand, and lay in it, with their clothes spread over a spade to keep the sun from their heads. For several days they had no water, and finally Dr. Hedin had to leave his servant behind, so that he was the last of the party. Up to that time he had been able to walk upright, but he now had to creep on all-fours.

"He could see a black line on the Eastern horizon, which he understood to be a forest on the banks of the river to which they were going, but at length when he got to the river bed he found it to be dry. The water only flowed from the end of June to the end of August, when the melting snow from the mountains came down like a flood. He would not, however, give up hope. He crept for hours about the river bed, and presently he heard a splashing sound, and saw a river bird rise in the air. 'And so,' Dr. Sven Hedin said, 'I was saved. I was on the very border of a little pool of water one tenth as big as this hall, cool and fresh, in a deep part of the river bed. I had not had a drop of water for seven days. The first thing I did was to thank God for saving my life, and I reckoned my pulse and found it was only 46 to the minute. After that I drank the first water, and then I was drinking 'heaps' of water. It was a very delicious feeling to find how my forehead became a little wet—it had been as dry as parchment before—and I could feel the blood beginning to run again. After drinking my pulse went up to 52, in a quarter of an hour to 60, and in a day or two to 62, but it took several days to reach the normal—72. I filled my boots with water, followed my footsteps back, and so I managed to save the life of the last servant I had brought.'

"Dr. Sven Hedin gave other details of absorbing interest in regard to his second journey, which, begun in 1899, occupied till 1902, and brought him again to his old desert in Central Asia. On this occasion, he said, he made a comfortable journey through the whole desert, which is traversed by a river fed by tributaries. He obtained a large ferry-boat, upon which he erected tents, and as he went down the river he was enabled to make detailed maps of the river and the erosions, and to mark out the camps of the nomads or shepherds, and the forests. He also discovered the ruins of a city mentioned in old Chinese chronicles. Dr. Hedin gave a humorous description of the 'racing' dromedaries on which he had to perform some of his journeys, the difficulties of mounting them, and of stopping the animals when they had once started. Lastly he gave expression to the great pleasure his visit to the University afforded him, and spoke of the value of scientific study. A graceful reference to the presence on the platform of Professor Rutherford, the winner of the Nobel Prize, was so heartily cheered that the Professor had to rise and acknowledge the greeting.

"'And now,' Dr. Sven Hedin said, 'about that drawing. I do not know what it should be.' There were loud cries of 'Dromedary,' and amid the laughter the Doctor took a piece of chalk and went to a blackboard. In about a minute and a half he drew a Tibetan

soldier, a wild and unkempt figure, armed with sword, gun and spear. There were loud cries of 'Sign,' but in the multitude of voices it was difficult to catch the word. Dr. Hopkinson explained to Dr. Sven Hedin the wishes of his audience, and he proceeded to write his name modestly in the bottom corner. This, however, would not do, and, obeying further shouts, he signed the drawing in his bold hand-writing on the top of the board. The board will be prepared so that the chalk drawing may be fixed, and will be placed in the Union rooms.

"A great crowd of students afterwards awaited the departure of Dr. Sven Hedin. When he entered the motor-car with his sister and Mr. Nuttall, M.P., he was not allowed to leave till he had shaken the scores of hands that were thrust out to him. A rope had been attached to the car so that the students might haul it through the streets, but in deference to the wishes of the College authorities, as being attended with danger, the idea was abandoned. For a considerable distance along Oxford Street, however, the car was attended by a cheering, hatless escort of students."—(*"Manchester Guardian,"* February 15th, 1909.)

The 817th Meeting of the Society took the form of a Dinner in honour of Dr. Sven Hedin and Miss Hedin at the Midland Hotel on Saturday, February 13th, 1909, at 7-15 p.m.

There was a large and representative gathering, and the speeches were in a large degree reminiscent of the morning's "adventures." Mr. Harry Nuttall, M.P., F.R.G.S., Chairman of the Council, presided, and among those present were Mrs. Nuttall, Right Rev. G. Rodney Eden, Bishop of Wakefield, Bishop Welldon, Sir Gilbert Parker, M.P., Sir Frank Forbes Adam, Vice-Chancellor Hopkinson, Mr. W. Joynson-Hicks, M.P., F.R.G.S., and Mrs. Joynson-Hicks, Major L. Forbes, Honorary Secretary Royal Scottish Geographical Society, Professor Boyd Dawkins, Mr. F. Zimmern, F.R.G.S., Vice-Chairman of the Council, and Mrs. Zimmern, Mr. J. Howard Reed, F.R.G.S., Honorary Secretary, and Mrs. Reed, Mr. Simon, Swedish Vice-Consul.

Mr. A. Albrechtsen, Professor B. Alexander, Mr. W. A. Arnold, Mr. and Mrs. Aron, Mr. W. S. Ascoli.

Mr. G. W. Bardsley, Councillor Charles Behrens, Mr. and Mrs. G. H. Bell, Mr. R. C. Bellamy, Mr. B. G. Bellamy, Mr. J. Blackhall, Mr. G. I. Blake, Mr. M. S. and Miss Bles, Mr. F. Boehm, Honduras Consul, Mr. S. Bramwell.

Mr. C. A. Clarke, Mr. A. Clegg, Mr. A. C. Crossfield.

Dr. S. Delepine.

Mr. G. Eckhard, Mr. C. Esquivel, Costa Rica Consul, Mr. E. R. Evans.

Mr. H. Forsyth.

Mr. G. Ginger, Major E. W. and Mrs. Greg, Alderman J. Griffiths,

Mr. J. H. Greenhow, Norwegian Vice-Consul, Mr. W. G. Groves, Mr. D. D. Gray.

Mr. and Mrs. C. Hahlo, Mr. J. A. Hailwood, Mr. H. Hilton, Mr. B. Hobson, M.Sc.

Mr. and Mrs. M. Kalisch, Mr. Henry Kessler, Mr. A. Knudsen, Danish Consul, and Mrs. Knudsen, Mr. and Mrs. N. Kolp.

Dr. and Mrs. G. H. Lancashire, Mr. and Mrs. E. H. Langdon, Mr. E. Latham, Mr. F. Cortez Leigh, Panama Vice-Consul, Mr. G. H. Leigh, Mr. J. Pinto Leite, Portuguese Vice-Consul, Mr. and Mrs. D. A. Little, Mr. A. W. Longden, Mr. C. Lord.

Mr. I. S. McDougall, Mr. and Mrs. J. McFarlane, Rev. J. E. McRae, Mr. G. C. Mandelberg, Mr. W. Marriot, Mr. C. Marx, Mr. S. Massey, Mr. and Mrs. O. Michelsen, Rev. P. Michlen.

Mr. and Mrs. J. Nicholson, Mr. N. Notman.

Mr. F. Oederlin, Mr. F. S. Oppenheim, Mr. S. Oppenheim, Austro-Hungarian Consul, and Mrs. Oppenheim, Mr. A. Ostefeld.

Miss Parkin, Mr. R. C. Phillips, Mr. A. Pickford, Mr. H. C. Pingstone.

Mr. and Mrs. R. Radbruch, Mr. J. S. Blake Reed, Mr. and Mrs. J. S. Reid, Mr. and Mrs. G. Reiss, Mr. J. Reitlinger, Mr. C. Renold, Mr. H. Renold, Mr. and Mrs. R. H. Reynolds, Mr. W. H. Robinson, Mr. J. W. Robson, Mr. C. Rowley, Mr. S. Ruttenau, Mr. and Mrs. W. Ruttenau.

Mr. O. Samson, Mr. T. Schlagintweit, German Consul, Miss Schlagintweit, Mr. A. V. Sharrat, Mr. and Mrs. C. Simmons, Mr. G. Simpson, Argentine Vice-Consul, Sir W. J. Sinclair, Mr. J. R. Smith, Mr. and Mrs. Harry Sowerbutts, Mr. and Mrs. T. W. Sowerbutts, Mr. E. F. Steinthal, Miss Steinthal, Mr. and Mrs. E. Steinthal, Mr. S. Steruberg, Dr. and Mrs. L. Sterne, Mr. and Mrs. E. Susmann.

Mr. W. Taylor, Councillor J. H. Thewlis, Mr. G. Thomas, Mr. M. W. Thompson, Mr. W. Thorpe.

Mr. W. H. Ward, Mr. M. Weigenthaler, Mr. and Mrs. W. Welsh, Mr. J. Woolfenden, junior, Mr. H. Woolley, F.R.G.S.

Mr. W. H. Zimmermann and Mr. N. H. Zimmermann.

The first, the Royal, toast was duly honoured, the President of the Society being specially mentioned.

The Chairman, in proposing the toast of the guest of the evening, "Dr. Sven Hedin," said that this was a red-letter day in the twenty-four years' history of the Society. In the short time Dr. Sven Hedin had been in Manchester he had impressed his magnetic personality on many people in this city. On the way to Manchester University that morning he had delighted the heart of the Rev. S. Alfred Steinthal by paying him a visit, and it was interesting to hear how Mr. Steinthal discussed with the explorer the interesting points of the last expedition to Central Asia. They read with astonishment of the learning Dr. Hedin had brought to bear on his travels and explorations—ethnology, zoology, botany, metallurgy, and many other sciences. But what struck the imagination very strongly indeed was the single-eyed enthusiasm he had shown in devoting his private

means to the life work he had chosen. He could not help thinking, when he heard Dr. Hedin at the University that morning, of the great influence such a life had in stimulating the aspirations and ideals of men. Whenever they thought of the great mountain ranges of Asia they could not do so without a picture rising in the mind which would associate always the name of Sven Hedin with that part of the geography of the world. Referring to the reception that was accorded Dr. Hedin everywhere, Mr. Nuttall said he believed that the explorer was entertained at sixty-three banquets in Japan in a period of thirty days. He had also been feted in St. Petersburg and London, and had now come to Manchester, with more to follow. They would, therefore, only hope that Dr. Hedin would not sigh for the solitudes of Tibet and cry "Save me from my friends."

In calling on Dr. Sven Hedin, the Chairman said it was the unanimous desire of the members present to elect the distinguished explorer an honorary member of the Manchester Geographical Society. This proposition was carried with the greatest enthusiasm.

Dr. Sven Hedin, who was much cheered, thanked the Society for the honour they had done him, and especially for electing him an honorary member of the Geographical Society. He remembered his first visit to Manchester twelve years ago, and the many friends he made on that occasion. Among them was their member the Rev. S. A. Steinthal, whom he had had the great pleasure to meet again that morning. He had had a remarkable experience at the University and he thought it was very charming because nothing could be more electrifying than the enthusiasm of young people. He enjoyed that reception immensely—more, indeed, than he could say. He had been travelling and exploring in Asia as long as their Society had been in existence. He was told it was established 24 years ago, and it was just 24 years ago since he began his first journey in Central Asia. And now, when he returned, he did not feel at all that he was their guest, but that he was amongst friends—he hoped not for the last time. He feared there had been some little exaggeration on their part about his journeys, because it would be much more difficult for him not to travel at all. He needed indeed much more energy to stay at home than to travel in Central Asia. He felt perfectly at home amongst the Tibetans and the Khirgis, but in going amongst them he had little fear of banquets. One day a time would come when he would need to go back to Tibet to get a little rest. If he did go back to the mountains of eternal snow he would take with him pleasant memories of many cities with geographical societies of Europe, amongst which Manchester and its Society would hold a foremost place. It was an extraordinary thing that at that table there was a relative of Professor Vambery, of Buda-Pesth, a great traveller, and that in Captain Schlagintweit, the German Consul, they had a member of a family of which three brothers—Hermann, Robert, and Adolf von Schlagintweit—travelled in the Himalayas and Central Asia, and added greatly to our knowledge of the Himalayan frontier and West Tibet. Among the list of names he

also found the name Forsyth, which was rather interesting, as it was a Forsyth who was chief of the mission dispatched to Yakub-Khan in 1883. Then he also found the name "Alexander," and no doubt he was a descendant of one of the greatest Asiatic explorers who made history. This gentleman, he added naively, ought even more than himself to have become an honorary member of their society. Lastly, he would like to say that the first name on the list was Adam, the name also, he believed, of a very old explorer. Dr. Hedin, on behalf of his sister and himself, expressed thanks for the reception accorded to him by the Society and by the citizens of Manchester.

The Bishop of Wakefield proposed the toast of "The Manchester Geographical Society." He said he could not help wondering as he listened to the speech of Dr. Sven Hedin how many of those present, whatever their educational advantages might have been, would have been able to stand up in the doctor's native country and respond to a toast in good Swedish. We could not exaggerate the importance of geographical societies, and he wished one were established in every considerable town as well as in our great cities. He was convinced that if English people could have their insular imagination a little more enlarged and stirred by actual knowledge of the conditions of life in other countries, we might think no less of ourselves in the best sense, but we might think more modestly when we compared ourselves with other people, not only to the advantage and perhaps to the humility of Englishmen, but also to the inestimable advantage—as they must find it in the city of Manchester—of the progress of commerce in the world, and the enlargement of the best kind of education for the citizens. They were doing a work in the Manchester Geographical Society which was bound to act in every way to the best advantage of the youngest portion of their people.

Responding, Mr. F. Zimmern, Vice-President of the Council, paid a tribute to the excellent work of Mr. Harry Sowerbutts, the Assistant Secretary, in connection with the Society. The ignorance of the greatest commercial country in the world, he added, in the subject of geography was appalling. The Geographical Society could claim to have enlightened this ignorance a little bit.

Mr. J. Howard Reed, Honorary Secretary, who also replied, drew rather a happy analogy between the various "ups and downs" of the Society and the sand hills of Tibet described by Dr. Sven Hedin the previous evening. Like the waves of the ocean, every ninth sand wave in that region was higher than the others. That night they had reached the summit of a ninth wave, from whence they looked forward brimful of hope with regard to the future of the Society. He hoped the inspiration of the evening would induce those who had been apathetic with regard to the fortunes of the society to come back to the fold, and that those who were not blessed with the geographical imagination would make up their minds that the society was worthy of their support. There was not a parochial society, and it was second only to the great Royal Geographical Society of London, of which many of them were proud to be fellows.

Bishop Welldon, in proposing "The Victoria University of Manchester," said there was no citizen of Manchester present who did not realise the growth of their University with genuine pride. The teaching staff of Manchester University was not surpassed among the staffs of the Universities of Great Britain. He would remind them that if Dr. Sven Hedin was the recipient of honour now, it was not long since one of their Manchester Professors was the recipient of a great honour in Stockholm. He believed in the future of modern Universities. If they could not compare in historical association and romantic charm with Oxford and Cambridge, yet intellectually they were becoming their equals. He would claim for the University in this city that its teachers possessed the advantage of being in close contact with affairs. There was no man living in an unreal atmosphere, and no student who thought that he was in that seat of learning to show "that ignorance was bliss," and to waste as much of his time as he possibly could and his parent's money. "It is," he added, "my ideal of a University like Victoria University that there should be no dons among the teachers, and no donkeys among the undergraduates."

Sir Frank Forbes Adam, replying, said there was no University in the Kingdom at the present moment that possessed a more devoted, zealous, disinterested, able and efficient staff than Manchester University. Their desire was to raise the character and standing of the University of Manchester, and to extend its borders till they permeated, as it were, every branch of life in this industrial centre. He was not so sure that before long they would have to establish a Faculty of Aviation. It seemed to be coming nearer, but at present the movement was only in the air. Though Manchester University prided itself on the work of research, there was still a great deal to be done. Indeed, he might say there was in many of the Faculties a Trans-Himalaya to be crossed. The example had been set by their worthy guest, whom they considered one of the leading lights in the world of geographical and scientific research.

After the toast of the ladies had been proposed by Mr. C. Rowley, and Mr. J. Walter Robson had replied, Professor Boyd Dawkins, in a brief speech, proposed "The Guests," namely, Major L. Forbes (Hon. Secretary Royal Scottish Geographical Society), and Mr. W. Joynson-Hicks, M.P.

Major Forbes said he was glad to make the personal acquaintance of the eminent explorer before he visited Scotland next week as the guest of the Royal Scottish Geographical Society. It seemed to him of the greatest importance for the Geographical Societies to be in as close touch as possible in order to take the fullest possible advantage of their organisations. Dr. Sven Hedin's journey had not only a geographical but also a national and imperial interest. He was to be congratulated that he was not a Britisher, and that he belonged to a nation which could not by the utmost stretch of the imagination be suspected of any ulterior design on the country which he was exploring, for had he been so he would probably have been prevented

from entering Tibet. Dr. Sven Hedin's exploration was of the greatest importance to England from the point of view of the strategy of the frontier. It was his personal hope that the great work which Dr. Sven Hedin had performed would encourage the authorities who were now controlling the supreme councils of their Indian Empire to put aside the timidity which had too long prevailed—also that they would not only accord their permission, but would give their countenance and support to such British officers as were willing to continue Dr. Hedin's work so happily inaugurated.

Mr. Joynton-Hicks, M.P., also replied in a few remarks, and said he was proud to associate himself with the welcome to Dr. Sven Hedin, and also expressed a wish to become a member of the Manchester Geographical Society if he could find members to nominate him. Immediately Mr. Harry Nuttall rose amid considerable enthusiasm and proposed Mr. Joynton-Hicks as a member, and this was seconded by Professor Boyd Dawkins. Mr. Joynton-Hicks was formally elected at the next Council meeting.

Mr. Simon, the Swedish Vice-Consul, also gave an interesting speech, and, on the motion of Vice-Chancellor Hopkinson, Mr. Nuttall was thanked for the great services he had rendered in connection with the visit of the distinguished explorer.

The 818th Meeting of the Society was held on Tuesday, February 16th, 1909, at 7.30 p.m.

In the chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meetings held on February 2nd, 9th, and 12th were taken as read.

The Election of the following Ordinary Members was announced: Rev. B. N. Adams, Messrs. Geo. Barber and Edward Rhodes, and Dr. Alfred Réé.

Miss Gabriela de Bolivar gave an address on "Venezuela," illustrating her remarks with lantern views. (See p. 18.)

Mr. W. H. Zimmern moved, Mr. C. A. Clarke seconded, and the Chairman supported a resolution of hearty thanks for the very interesting account the Lecturer had given of her native country, and the resolution was passed unanimously with applause.

The 819th Meeting of the Society was held on Tuesday, February 23rd, 1909, at 7.30 p.m.

In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on February 16th were taken as read.

The Election of the following Members was announced—Life: Mr. R. W. Wallace; Ordinary: Mrs. Dentith, Messrs. W. E. Ashworth, P. W. Biggs, Henry E. David, W. Joynton Hicks, M.P., J. Pinto Leite (Vice-Consul for Portugal), G. W. Nichols, Hans Renold, C. L. Simmons, and W. Welsh; Associate: Miss A. J. Clear.

Mr. F. Stevenson gave an account of his visit to "Portugal and

the Canary Islands," illustrating his remarks with a large number of lantern views.

Mr. Charles Roeder, in moving a vote of thanks to the Lecturer, said—I am sure we all are much obliged to Mr. Stevenson for the very stimulating account he has given us to-night of Portugal, on which we have already had some excellent papers, foremost amongst them Mr. E. W. Mellor's delightful sketch, supplemented now, and vividly brought back to our memory by Mr. Stevenson who has carried us again in a pleasant way over familiar ground.

From Portugal he has taken us to the Canaries, a group of islands which offer great interest to the visitor, but which have scarcely been touched upon by any of our members. It is therefore gratifying to have placed before us some of the observations and experiences resulting from his visit. Time is too short, however, for me to enter into a discussion, but I may point out, from a commercial side, that the Islands are of intrinsic importance to this country, and that there exists a large trade between the two, increasing from year to year.

We ship a large amount of goods from Manchester to the Canaries which in return remit fruit as their payment, consisting of tomatoes, potatoes and bananas. Perhaps the Society is not aware that for the revival of the trade we are under deep obligation to Mr. N. Kolp, an esteemed and prominent member of the council, who has been instrumental, to a large degree, in retrieving the fallen fortunes of the Islands after the collapse of the cochineal which used to be the staple export, supplanted, as it was, by the introduction of artificial dyes, to the ruin of the cultivators, the prices declining from 5/- to sixpence per pound. It at once paralysed all business, and spelled failure and bankruptcy. Cane-sugar and tobacco were tried, but little answered the expectations raised.

It was then that Mr. Kolp stepped into the field, and induced the Canary growers to take up the tomato and potato for cultivation on an extensive scale. He had to fight a hard battle and was indefatigable for many years in furthering the project, and devoted all his great energy to the proper carrying out of the work he had taken in hand. Costly experiments were made with English seedlings, and he never ceased in his endeavours until the long-continued trials proved perfectly successful. In addition to this, he most carefully studied the packing required for the perishable fruit so that it reached the English markets in sound, profitable condition.

Bananas were added to the list subsequently, and now, thanks to him chiefly, the Islands are doing a prosperous and regular trade with London and Liverpool, and the quality is such that their demand and ready sale are now firmly established.

Elder, Fyfe & Co., run specially constructed steamers for the carriage of the fruit which reaches the English ports within six to seven days.

Mr. Kolp has therefore done a very great service to both countries, and Manchester traders reap the benefit of his labours and exertions.

I am glad to have an opportunity to place this information before the members of our Society in connection with the second part of Mr. Stevenson's lecture, and beg to move a vote of thanks to him for the treat he has given us to-night.

The chairman, Mr. Reed, before calling on the seconder of this vote of thanks, expressed his gratification that the evening's proceedings had brought to light the work that had been done by one of the Society's members, so appropriately referred to by the mover of the resolution.

We know—he went on to say—that Mr. Kolp is always ready to lend his valuable services and his advice and practical support to our work, and here we have been furnished with an instance of his activity in distant parts, where he has been instrumental in originating and developing an industry of importance, which is a source of wealth to the inhabitants of the Islands and a benefit to the community at home.

It is wonderful how again and again we find that a lecture on any part of the world, however remote, immediately touches one of our members.

The Resolution, which was seconded by Mr. R. Graham Burton, was passed unanimously.

The 820th Meeting of the Society was held on Tuesday, March 2nd, 1909, at 7-30 p.m.

In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on February 23rd, 1909, were taken as read.

Councillor Walter Butterworth, J.P., gave an address on "The Chateaux of the Valley of the Loire," illustrating his remarks with lantern views.

The Chairman moved, Mr. C. A. Clarke seconded, and it was unanimously resolved that the thanks of the Meeting be given to the Lecturer for his interesting address.

The 821st Meeting of the Society was held on Tuesday, March 9th, 1909, at 7-30 p.m.

In the chair, Mr. J. E. Balmer, F.R.G.S.

The Minutes of the Meeting held on March 2nd were taken as read.

The Election of the following Members was announced—
Ordinary: Miss Alice H. Woolfenden, Messrs. S. S. Doran, J. Ernest Phythian, and R. S. H. Woolfenden; Associate: Miss E. I. Sales.

Mr. Horace C. Martin, F.R.G.S., described his experiences as Delegate of the Society "At Geneva with the International Geographical Congress and After," illustrating his address with lantern views, many of them original.

Mr. George Ginger moved, Mr. J. Howard Bentley, F.R.G.S.,

seconded, and it was unanimously resolved that the thanks of the Meeting be given to Mr. Martin for his interesting address and Report.

The 822nd Meeting of the Society was held on Tuesday, March 16th, 1909, at 7-30 p.m.

In the chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on March 9th were taken as read.

Mr. J. Walter Robson (Member of the Alpine Club, etc) gave an account of his experiences among "Alpine Peaks and Valleys, illustrating his remarks with a large number of original lantern views.

Dr. L. Sterne moved and Mr. C. A. Clarke seconded a hearty vote of thanks to Mr. Robson for the intensely interesting and vivid description of his visits to some Alpine Peaks.

The 823rd Meeting of the Society was held on Tuesday, March 23rd, 1909, at 7-30 p.m.

In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on March 16th were taken as read.

The Chairman mentioned the loss the Society had sustained in the death of the Rt. Hon. Earl Egerton of Tatton, who was elected a Member of the Council at the formation of the Society in 1884, and had been Vice-President for the 25 years since. Mr. Reed intimated that the Council had already sent a letter of sympathy to the relatives.

The Election of the following four Members was announced—Messrs. W. M. Johnson, Richard Jones, Wm. Nichol and E. C. Whitehouse.

Mr. Samuel Hardman, F.R.G.S., read a paper on "The Panama Canal," illustrating his remarks with lantern slides.

Mr. W. M. Reekie moved and Sir Bosdin T. Leech, J.P., seconded a resolution expressing the thanks of the Meeting to the Lecturer for his informing address, and the resolution was passed unanimously.

The 824th Meeting of the Society was held on Tuesday, March 30th, 1909, at 7-30 p.m.

In the chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on March 23rd were taken as read.

Miss Philips described a visit to "Sicily," illustrating her remarks with original and other lantern slides.

A vote of thanks, expressing the appreciation by those present of the interesting and instructive address given by Miss Philips, was moved by Mr. E. J. Broadfield, B.A., LL.D., seconded by Mr. J. Howard Reed, F.R.G.S., and passed unanimously.

Review.

"Stieler's Atlas of Modern Geography." Adapted for the use of the English speaking public by B. V. DARBISHIRE, M.A. Ninth Edition. Gotha: Justus Perthes, 1909. (London Agency, Asher & Co.).

It is with much pleasure that we note that the ninth edition of this valuable Atlas has now appeared in a form which will make it more attractive to those unacquainted with the German language. It has, of course, been impossible to alter the names engraved on the maps themselves, but on the back of each map there now appears an English translation of the key to the references and signs which have been employed; and this alteration undoubtedly removes the greatest obstacle to the more general use of the Atlas in this country. Any intelligent person can easily learn the meaning of the comparatively few German common nouns used on the maps (though a short vocabulary would have been an improvement), while the English equivalents for German proper names are usually obvious.

In preparing the ninth edition of Stieler's Atlas the publishers have been mindful of its high reputation, and have sought to produce a thoroughly reliable piece of work. Many of the maps are entirely new, while others have been carefully revised and brought up to date. We venture to think, however, that the results would occasionally have been more satisfactory had density of population been taken into consideration in deciding the scale on which a map should be drawn. For example, the maps of Great Britain on a scale of 1:1,500,000 are much overburdened and somewhat confusing. Had these been produced on the same scale as that employed in the map of the Thuringian States, viz., 1:500,000, the results would have been distinctly better. Some of the European sheets are beautiful pieces of work, though the general map of Germany is somewhat overcrowded and is not so instructive as, say, that of Austria-Hungary.

Many of the maps of Asia, embodying as they do the results of recent investigations, are among the best that have been produced of this part of the world, but we regret that there is not a good general map of the whole of India which would bring out clearly the physical region of that country. The map of China is good, but is undoubtedly difficult to read.

The New World has been generously treated in a series of excellent maps, and the general maps of North and South America and of the United States are all good. This is rather more than can be said of the general maps of Africa and New Zealand, neither of which brings out the land form very well.

On the whole, however, this is by far the best Atlas, for its price, with which we are acquainted, and we hope that its use in this country will be even more extensive in the future than in the past.

J. McF.

The Journal

OF THE

Manchester Geographical Society.



ALPINE PEAKS AND VALLEYS.

By J. WALTER ROBSON, Member of the Alpine Club, etc.

(Read before the Society in the Geographical Hall on Tuesday,
March 16th, 1909.)

THE principal chain of the European Highlands—well called the “playground of Europe”—comprises nearly 800 miles of peaks, passes and glaciers, stretching from the Austrian Tyrol at its eastern extremity to the Dauphiné and Maritime Alps on the French shores of the Mediterranean.

The whole are spoken of as “The Alps”; but in that long chain of mighty peaks is to be found a variety of form and beauty almost infinite. A lifetime of wandering will not exhaust, nor can familiarity stale, their charms; for, added to the changes wrought by the seasons, the wanderer will find beneath the shadows of these towering sentinels a wealth of enchanting scenery, an endless succession of charming valleys. There eternal change is wrought by the passing years; the hand of time is seen working in the snow and ice, in the crumbling crags and pinnacles, in the ever-widening torrents.

The dwellers in the recesses of the mountains differ widely as one passes from end to end. The hardy and musical Tyrolese, the stolid German Swiss, the romantic Italians, and the industrious French have each their patois-speaking countrymen in the upland valleys. Language, modes of living, temperament and physical qualities are widely different. The physical features of the country, and more especially of the mountains themselves, vary in each district. The rock turrets and ice fortresses of the Dolomites merge into the glittering snow-clad domes of the Swiss Alps, which in turn give place to the cathedral spires of the Chamonix Aiguilles, and farther south to the rolling purple and less savage grandeur of the Graian and Cottian Alps.

It may be interesting, therefore to describe some of these,
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and, with the aid of photographs, to convey some of their characteristic beauties.

If with this description is mingled something of mountaineering it is of necessity. He who has spent many summer and winter vacations in the Alps believes that the real charm of the mountains is felt only by the climber. The peaks themselves may be admired, but not truly seen, from below. One must scale their rocks, penetrate their recesses and conquer their summits. There is to be seen the grey and orange magnificence of the coming day, the ever-growing brilliance of the shimmering peaks or the diaphanous rosy tints of the *Alpenglow*. These dwell in the memory of the climber, and his long and arduous days, varied by adventure and by visions of the blue haze of the distant *rauges*, or the grandeur of the mountain storm, or the rolling seas of cloud, are to him lasting and treasured recollections. He may be forgiven, therefore, for his unreasoning enthusiasm.

Let us, in the unmethodical manner of wanderers, begin at Zinal, in the Val d'Anniviers. This place is approached from Sierre, in the Rhone Valley, and is about seventeen miles from that place. It is a favourite starting point for the ascent of the Zinal Rothhorn.

One summer afternoon in August we went up to the Mountet Hut from Zinal. This hut is at a height of 9,500 feet above sea level and is four and a half hours' walk from Zinal. Our intention was to traverse the Zinal Rothhorn, to ascend one ridge and to descend the ridge on the opposite side of the peak. Rising at 1-30 a.m. the morning after our arrival, we started out in the darkness. We paid our bills before leaving, for, although we intended to return to the hut in the afternoon, the custodian preferred to take no risks, in case we did not come back. Outside the hut the stars were twinkling and the wind was cold. The frost was keen, and promised good condition for the snow. With lighted lanterns we left the hut and bore away towards the east up a gradual slope of snow. The snow was in fair condition, and we made rapid progress for the first hour. There was a keen wind blowing, the stars shone clearly, but it was necessary to use lanterns. By and by the slope increased in steepness, and occasional slips and stumbles made it advisable to put on the rope, and at the same time to allow a minute or two for breathing. We proceeded again, turning northwards, the slope still steepening,

and at daybreak, about 4-30, lanterns were dispensed with. The first rays of the rising sun fell upon the peak of the Gabelhorn. We ourselves were in deep shade as the ridge of the Rothhorn intercepted the rays of the sun. Presently the foot of a steep snow ridge, some 200 or 300 feet high, was reached, the top edge of which was almost horizontal. This ridge unites a mountain called the Besso with the Rothhorn, and it was necessary to pass along the edge of this in order to gain access to the peak of the Rothhorn itself. At the foot of the ridge there was the usual Bergschrund. This caused no difficulty, but steps had to be cut in the very steep slope leading up to the ridge. The summit of the ridge was gained in due course, and we found it almost like a knife-edge. The snow on either side had been swept up by the wind, and in no place was the ridge more than a few inches across. The method of progress was the usual one of stamping down the snow into footsteps and walking as on a tight-rope. Additional inconvenience was caused by the high wind from which we had been protected whilst under the lee of the ridge. The route was along the ridge to the east, and, although it looked horizontal from below, it actually rose gradually and then steeply, but still with the same sharp edge until the terrible looking rock ridge of the Rothhorn broke through. The view given of the ridge will give an idea of the formation of the mountain, looking like an immense wall on the point of tumbling over, or perhaps still more like the crest of an immense wave the top of which has risen to a point and unsupported on either side, is about to fall over in a breaker. The mass appears stupendous, and although one might suspect the frontispiece in Leslie Stephen's book entitled "The Playground of Europe" to be somewhat exaggerated it was remarkably like the actual peak. From the point where the rocks first begin it was like climbing a giant staircase in ruins. The immense blocks of rock overhanging threateningly on near approach, and looked formidable obstacles to surmount. Occasionally a dip between two huge blocks would form a narrow edge upon which one could sit astride with one leg on either side of the mountain, and on either side a sheer drop of thousands of feet. The climbing of the ridge occupied about four hours, and when at last the summit was reached at 10-30 a.m., and we looked back upon the way, it was agreed that the Rothhorn had justified its reputation. We still felt the keen icy blast, probably the

same one which Leslie Stephen said "penetrated his coat as though it had been made of gossamer, pierced his skin, whistled merrily through his ribs, and after chilling the internal organs passed out at the other side with unabated vigour." Excitement and exertion brought warmth, and the first exclamation on attaining the summit was in wonder at the view and in admiration of the peak itself. Close at hand was the magnificent mass of the Dent Blanche, like an immense perpendicular wall, with its crevasses veined in snow, the Matterhorn standing alone in grandeur like a monarch, the Weisshorn with the sun on its open face, and multitudes of other glistening and towering peaks stretching away to a distance on all sides of sixty or seventy miles in uninterrupted array. Below, on the right and left, were the smooth, unscalable walls of our own mountain, which almost made one dizzy to look down. Behind was the ridge by which we had ascended, and in front was the way of our descent, looking still more trying and formidable. A record of the ascent was made by the usual method of putting visiting cards in a bottle; and, after half an hour on the summit, descent was begun. As in ascending, a number of rock pinnacles have to be passed along the ridge, but the climbing of these is much more trying in the descent than in the ascent. There is continually before one's eyes the precipitous slopes on either side of the mountain. After half an hour or so of this kind of climbing we met on the ridge a party of five climbers who were ascending from Zermatt; and shortly after passing them we took to the right-hand fork of the ridge in order to reach the west flank of the mountain and so return to the point from which we started in the morning. By this time the wind had increased almost to a hurricane, and occasionally drifts of clouds came across the ridge and blotted everything from vision. Some difficult and exposed pieces of rock had to be descended, and on reaching the end of the ridge and taking to the face of the peak, the steep slope was found to be covered with hard ice. Slowly, and with great care, the leading guide cut steps down this ice. When we were half way down this face, and needing all the assistance possible to enable the best route to be selected, a blinding snowstorm came on. The snow and hail blew up in our faces and stung as though someone were firing peas through a pea-shooter. After an hour of this slow and numbing progress the clouds and



Fig. 1. Zinal.

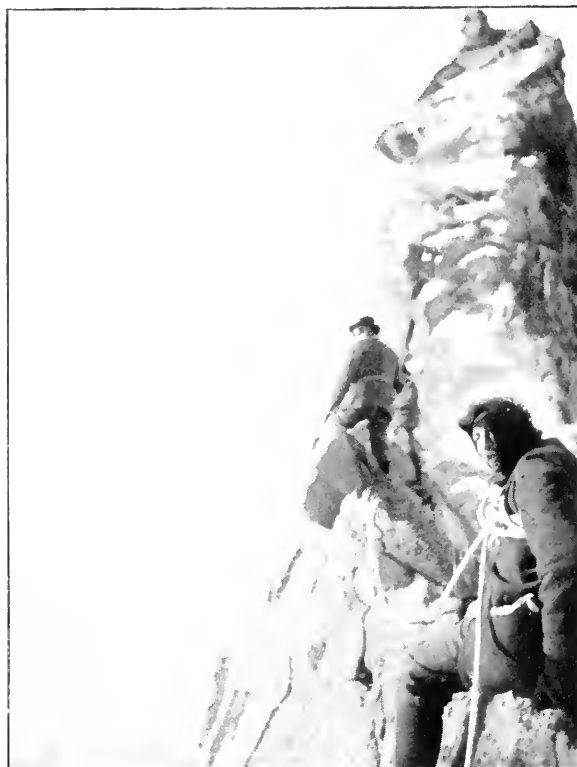


Fig. 2. Last Rocks of the Rothhorn.



hail disappeared, and there was a clear view to the foot of the slope. Still cutting steps the party slowly descended; the slope eased off a little and gave way to snow, and we were glad to be able to get off the ice. It was necessary still, before the work was finished, to cross the head of another glacier and climb up a little dip in the rock ridge, which was called the Rothhorn Joch. This ridge was made up of rotten rock, and took considerable time to pass. That point passed, the rest was easy. Glissading the long snow slope, in a few minutes we came in sight of our hut. We ran, tumbled, rolled and slid down the snow to the foot of the slope, and reached, at 4-30 p.m., the place we had left in the morning. The expedition had taken between 13 and 14 hours from the hut. It took 2½ hours more to reach Zinal.

The climb is a long and fatiguing one, as there is very little time for rest nor are there many easy places. But all this is, of course, soon forgotten, the keen exhilaration and joy of having attained the summit and of having passed through and successfully overcome all the difficulties of the mountain, are experiences which of themselves must be beneficial. Leslie Stephen, the pioneer of the Rothhorn, thus speaks of his return after the first conquest: "We had seldom known a happier half hour than that in which we basked on the mossy turf in the shade of the great Rothhorn; all our internal sensations of present comfort, of hard-won victory and of lovely scenery delicately harmonised by the hallowing influence of tobacco." Keen as the enjoyment of a pioneer must be, all mountaineers can appreciate something of the pleasure, even though the mountain has been climbed hundreds of times before.

The Matterhorn is, of course, a famous mountain. From Zermatt, probably, some hundreds of people make the ascent each summer. Its traverse to Breuil (on the Italian side) in a snowstorm is not, however, an easy matter. This was the experience we once had, but space will not admit of the description.

From the south-east ridge of the Matterhorn a good view is obtained of the Dent Blanche on the opposite side of the valley. Its south and north ridges show on the skyline, with the Col d'Iherens on the left. The south ridge appears disappointingly gentle in slope, because when you are climbing this ridge the rocks seem to tower above you almost perpendicularly. It must always be a trying mountain to climb, because care is

necessary at almost every step, but perfect conditions for an ascent will do much to conceal any terrors which it may have. Intense cold was our only discomfort in the ascent and intense heat in descending.

The ascent of the Grand Combin and descent to Bourg St. Pierre is made from the Panossiere Club Hut on the Corbassiere Glacier. It is three to four hours up to the hut from Mauvoisin. The magnificent snows and the ice cliffs of the Combin can be well seen from this point, and the mountain looks a fine one, far more imposing than it does from above Mauvoisin looking west. There is a steep snow wall on the way up from this side, and one would imagine that, if only for the more comfortable passage of this wall, it would be better to start from the Panossiere Hut on the north than from the Valsorey Hut on the south. Our party descended on the north side, and found this point very ticklish on account of the soft snow. The wall was at so steep an angle that even with the deepest possible holes in the snow it was doubtful whether the sides would not give way and let the whole party down. We saw below four men returning to the Panossiere Hut, having failed in their attempt to ascend this wall, or perhaps it will be more just to say that they considered the passage unsafe.

The summit of the Combin is a long, sharp, snow ridge, with a cornice leaning over the south side and a smooth snow slope on the north face. The top seems exposed more than many other mountain summits are, and the north wind chilled us to the bone. We found it no place to sit and rest or feed, but merely looked over the cornice, generally took in the view and were photographed. A quarter of an hour sufficed for this.

From the Valsorey Hut on the south side a steep scramble up slabby rocks, rotten, and on which loose stones were sprinkled, led to the Combin de Valsorey. From the little col below this summit we followed the edge of the snow gable, in a furious wind, to the top.

The Valsorey Hut is new and very conveniently situated. It is a pleasant walk up from Bourg St. Pierre, the more pleasant because this odorous village is ugly and uninviting although on the main road to the St. Bernard Pass. One sees crétins in the street, repulsive sights to an Englishman. Rain kept us there a day; when otherwise we did not wish to spend an hour.

Westward again is the Argentière range and the Trient

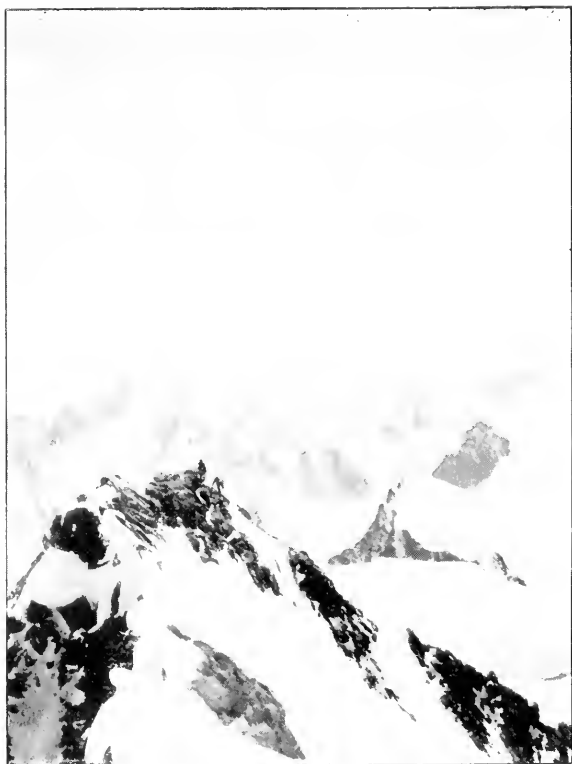


Fig. 3. The South Ridge of the Dent Blanche



Fig. 4. Aiguille d'Argentière.



group. These form the outworks of the striking aiguilles round Mont Blanc. The Aiguille d'Argentière is a fine climb. At least we considered it distinctly difficult, as we ascended by a great snow couloir from the Saleinaz Glacier on its east face, and reaching the south-east ridge, about 1,000 feet from the summit, we followed this and then got on to the snowy face below a beautiful cornice connecting the two summits. It was a curious optical illusion to see this cornice, apparently 500 feet above, and looking 30 or 40 feet high, and afterwards to find it only 100 feet away and so small that one could stride over it!

Our design was to descend to the Col du Chardonnet down by the north ridge. Cutting down a very steep ice couloir, we soon got on to a broken up ridge, consisting at first of pinnacles of rotten rock, alternating with snow edges, but later becoming a succession of crazy and drunken gendarmes, the sides and tops of which came away in huge splinters as they were touched. Hour after hour of slow progress passed, and frequently it was necessary to try in all directions before we could pass these ugly custodians of the path. The heat was terrific, and we had no liquid—it was difficult to speak with throats dry as bricks and tongues parched. At last a sergeant indeed stopped us and positively ordered us off the ridge. Taking to a small buttress of the main ridge, and bringing large pieces of the mountain away, notwithstanding the greatest care, we at length got on to the edge of the glacier and mounted to the Col du Chardonnet. Our local guide wanted to descend the nearer col, at the head of which was a cairn, but it was steep and soft and looked uninviting. We therefore crossed over to a dip nearer the Aiguille du Chardonnet and got down some bad rocks on to the Saleinaz Glacier. Looking up at the first col, just mentioned, we saw that the upper lip of the schrund or crevasse at its foot was rounded and frozen, and we could not see how it would have been possible to get down safely. We reached the Saleinaz Hut at 10-55 p.m., after 20 hours' hard work.

There is much pleasant scrambling about the peaks and glaciers in this district, and the range of mountains is graduated in difficulty. You can begin with the Pointe d'Orny or the Aiguille du Tour and by increasingly difficult ascents tackle the traverse of the Tour Noir at the south end of the chain. The Saleinaz Hut is large and comfortable, but if you object to sleeping in a hut more than two nights together, you must

be prepared for long days, as Orsieres or Lac Champex or Praz de Fort add hours each way to a climb. This is the district dear to Emile Javelle, and so beautifully described in his "Alpine Memories."

One must at least mention one of the most charming and popular spots in the Alps—Arolla. This place is at the head of the Val d'Herens, nineteen miles from Sion, in the Rhone Valley. It is a favourite centre for some magnificent rock climbs, such as the Aiguille la Za, Aiguille Rouges, Grande and Petite Dents de Veisivi, Bouquetins and many other delightful ascents. But nothing except time will be able to remove from Arolla the wonderful charm of its situation. There is always the glistening dome of Mont Collon, the striking needle peaks towering above the valley on either side, the noble pine woods, the noisy torrent, and the lovely slopes carpeted with flowers. Its altitude of over 6,000 feet above sea level makes it one of the most healthful of Alpine resorts. Few who have visited the place can resist a second visit.

Chamonix, now the most accessible centre from England for climbers, has to-day little claim to fame except as a starting point for Mont Blanc, that most monotonous snow tramp. Even this mountain is oftener ascended by mountaineers from Courmayeur on the Italian side, whilst the beautiful aiguilles are ascended from the Montanvert, or from the Plan des Aiguilles, a little chalet 3,000 feet above Chamonix.

One can from Chamonix, by way of the Montanvert, get into the heart of the snow and ice region into scenes of indescribable grandeur. Along the great glacier one can take an easy but delightful expedition, with about a quarter of an hour of rock climbing thrown in, to the Jardin, a huge rock at a height of 11,000 feet, protruding through one of the tributary glaciers and surrounded by everlasting snow. Its moraine covered surface grows in the summer thousands of lovely Alpine flowers. From this point is to be seen a vast amphitheatre of noble and gigantic peaks; to the west, overtopping all her neighbours, the rounded dome of Mont Blanc and above, the sky, black by contrast, throws up the whitened edges of the serrated ridges connecting the aiguilles.

On to the south is the ice fall of the Col du Geant, the favourite pass into Italy, and from the summit of this pass (12,000 feet up) the aspect of the Alps is changed. The warm



Fig. 5. Grand Combin.



Fig. 6. Grand Combin from Pointe d'Orny.



south is there, its soft haze filling the valleys and its snow peaks. The Italian Alps stretch away into distance, an "ocean in flowing purple." There is nothing of wildness, of savage grandeur in them. They are the Alps, but softened by the sombre green of the valleys and rounder outlines of the peaks.

Many attempts are made to describe adequately views from mountain summits. Of course no two views are alike, nor is the view the same on two different days. There is the abnormally clear and distant prospect (a bad omen for weather indeed) with a blue-black sky above, a contrast in shades light and dark, a vision of far-off streams of molten silver. Sometimes you are cut off from the earth above a sea of cloud, perfectly stationary, grey and fleecy, the sharp tips of the higher peaks standing out like lonely rocks in a great ocean, and with no sign of human habitation or of living creature to be seen. Again, the rolling masses of seething vapour are hurled by the wind against your face with tremendous force, your voice cannot be heard because of the roaring of the icy-cold blast, and the pinnacle of rock on which you stand trembles with heavy onslaughts made upon it by the mighty hurricane. Or the soft mist whirls in gentle eddies round you coming up slowly from below; the veil is riven, and for an instant you catch a glimpse of fairyland in roseate colours far below, a magic vision indeed.

Words cannot faintly describe these beauties nor can the brush paint them. But in the memory they are a lifetime:—

"A land of streams; some like a downward smoke,
Slow dropping veils of thinnest lawn, did go;
They saw the gleaming river seaward flow
From the inner land: far off, those mountain tops,
Those silent pinnacles of aged snow,
Stood sunset flushed."

And southward lie the Graians and the Dauphiné. They have a distinctive beauty and attraction which is difficult to define. It appears in a gentleness of outline—a passive as distinguished from an aggressive glory. Here the hills are panoplied in deep purple velvet brodered with gold, and as the day closes the golden embroidery fades into orange, crimson and grey "till the last pale light has gone." You have left the region

“ Where the pass expands
Its stony jaws, the abrupt mountain breaks,
And seems, with its accumulated crags,
To overhang the world.”

At the eastern end of the mighty chain of highlands the Dolomites of Tyrol are the most striking features. Innsbruck, the ancient capital of Tyrol, is the gateway to this region. It is a quaint and interesting town, perhaps the most interesting (next to Salzburg) in the German Alps. It has a fine situation, and commands in every direction views of bold and towering peaks of fissured limestone. Though deep in a confluence of valleys, its altitude is 2,000 feet above sea level, and its greatest disfigurement is the volume of black peat smoke which pours from the huge chimney stacks of the railway locomotives. A walk through its streets reminds one of its royal associations, and the statue of Andreas Hefer recalls a struggle for liberty a hundred years ago when the Tyrolese peasants, under his leadership, took and re-took the town from the Bavarians.

Passing through to the south, the railway traverses the famous Brenner Pass, which forms the watershed between the Black Sea and the Adriatic. The Brenner Station, at the summit, is twenty-five miles from Innsbruck and is 4,500 feet above sea level.

By way of the fortified town of Franzensfeste, the line for Vienna and Trieste is reached, and for the Southern Tyrol most travellers alight at the station of Toblach. This village is an inner portal, guarding the entrance to the Dolomite region. From it a good road winds through the defiles to Cortina, the capital of the Ampezzo Valley. By the Toblacher See the road enters a fine gorge, and presently ascends to the level of a plateau in which is the beautiful Durrensee, beloved of photographers. Here a little stony beach juts out into the lake, and he must be deprived of all artistic sense who does not instantly fix his camera on this spot. Monte Cristallo, with its snow-ribbed northern face, is perfectly reflected in the smooth surface of the water, and to all appearance closes the valley end. Then the village of Schluderbach is reached, where all and sundry make a short stay before proceeding on the journey to Cortina. Tourists of all nationalities, both walking and in every conceivable kind of wheeled vehicle, are to be seen. For this country is beloved of walkers. It is to the Austrians,

German and Italians what the fells of Cumberland are to a north countryman; the difference being that the walker in Tyrol must stick to the mountain tracks; the Dolomite summits are to be scaled only by the practised mountaineer.

To the west of Schludersbach is a fine peak called the Croda Rossa, or Red Peak, so called because the rock shows a blood-red colour in the setting sun. This rock colour is characteristic of Dolomite rock, and a range of peaks near Botzen is called the Rosengarten because at sunrise its eastern face reflects from the sun a rose-pink colour. After passing through a tiny hamlet called Ospitale, and turning towards the south, Cortina is seen. Here one notices the true Dolomite formation of peak. The Croda da Lago is seen to the west, and the crest of the Antelao leans over as though about to fall from the main mass of the mountain.

To the left of the village, as one approaches, is the famous Tre Croci (or Three Cross) Road, which runs through magnificent scenery. Here the valley has widened out, and the mountains are seen in their due proportions. Fantastic in shape, these sharp peaks stand out against the bright sky, and most of them look utterly impracticable as climbs. We subsequently found, however, that with most of them, where there's a will there's a way to the summit.

In the middle of the valley, dominated by a simple but picturesque campanile (for here we are not five miles from the Italian border) is the village of Cortina, the capital of the Ampezzo Valley. This village has about 800 inhabitants, and is situate at a height of 4,000 feet above sea level. Its half Italian life and manners make it a charming resort. It is within a day's journey of Venice, Verona and Padua, and can be approached from all directions by good mountain roads or footpaths.

But the rock climbing is superb. The guides are as a rule short, active, lithe men, and they have a habit of keeping up a constant chatter during a climb. They have always a little extra wind for this, however trying the climb may be. On one occasion our party joined with three others in an attack on the Col Rosa, a steep face climb. There were seven tourists and eight guides, and the eight guides chattered, joked and laughed together all the way up the steep rocks.

Four out of the seven Englishmen in this party were anxious to scale a peak of fearful reputation called the Kleine Zinne.

As a rock climb it was said to be one of the most difficult in the Alps. Each of the four had read a book called "Dolomite Strongholds," by the Rev. J. Sanger Davies, and were much impressed by his blood-curdling description of the ascent, which Mr. Davies made on the south side. It was known to be a difficult ascent, being a steep rock climb from bottom to top. Crack English cragsmen spoke of it with respect, and if one had been to the Dolomites not to have climbed either the Funffinger-spitze or the Kleine Zinne was as though a mountaineer had frequently visited Zermatt but never climbed the Matterhorn. So enquiries were made, having in mind such passages from Mr. Davies as the following:—

"I will say that I believe the next piece of our climb" (referring to a portion of the south side of the peak) "as an exception to every other place I have seen or heard of, ought to be taken without the rope, or preferably not at all. This unique bit of work is 'the Little Zinne traverse' we had heard so much of. It is a horizontal ledge running to our left as we face the rock, following the line of a stratum which had been softer than the layers above and below, and, perishing, had left a groove which ran at a fair level around a considerable portion of the mountain. The drop from the edge was absolutely perpendicular and the distance nearly 2,000 feet. Of the breadth I am more certain; it nowhere exceeds 15 inches on the flat, and the usual width was about 9 inches. This, of course, would be 6 inches more than any rock climber would need if there had been any handhold, but there was no safe grip from beginning to end. In the whole of my experience on the Dolomites this is the only passage that I should be unwilling to try again—a slipping foot, or a swimming head, or an uncertain eye, would settle the case of its possessor, and of his companions if roped to him." And so on.

The terrifying sketches in Mr. Sanger Davies' book, added to descriptive matter in terms above quoted, had given many an uneasy moment, and the broken dreams of the night before the first ascent must be familiar to many climbers.

It is tempting to underrate difficulties after a peak has been climbed, but all the most expert mountaineers agree in maintaining the ascent of the Kleine Zinne to be a serious undertaking. Sigmund Zilzer defines it as "extraordinarily difficult," and says it demands "*absolute sang froid*."

It must be conceded that to have climbed this peak appeared



Fig. 7. Ice Cliffs on the Grand Combin.



Fig. 8. Gabelhorn and Matterhorn from Lo Besso.



a much more comfortable state than the contemplating of its ascent on the morrow, and when the guides Pompanin and Zangiacomi suggested that it should be crossed from north to south, it was necessary to make enquiries as to the reputation of the north face. Our information was that it was the more difficult of the two. This was really alarming! The appalling ledge of 9 inches on the south face quite enough to imagine, but imagination failed at anything more difficult. Which was perhaps a good thing. The traverse, or double route, was decided on.

We drove along the high road from Cortina to Landro, a distance of ten miles. There were four guides, four tourists and a porter—the latter to carry eight pairs of hobnailed boots, with some food, from the starting point at the foot of the peak on the north side round by the valley to the south side. From Landro the path up to the Drei Zinnen Hut follows the windings of the ravine, ascending sharply at times. The hut is seven miles from Landro, and we reached it just as darkness came on.

At 2-30 a.m. breakfast was ready (how very small the appetites were!) and half an hour later a start was made for the peak. The three Zinnen were to be seen across the dip from the hut looking about a quarter of an hour's walk away. It took quite two and a half hours of good walking to get to the little rock or col between the Kleine and the Grosse Zinne.

There was a long grind over what is called "scree" in the Lake District—really rock debris, detritus or grava lying at a steep angle, and piled up in blocks of various sizes and often of unstable equilibrium, trying to the temper and to the ankles; and about 5 o'clock the little col was reached from which the actual ascent was to be made.

After a second and more hearty breakfast, the hobnails were discarded and scarpetti put on. Most of the climbing in the Dolomites is best accomplished with these rope-soled boots. They are used by the chamois hunters, and enable the climber to move rapidly on steep rock owing to their gripping power on the rough surface.

After loading up the porter with the heavy boots and other luggage, we watched him descend from the little col, and then roped for ascent of the rock towering high above us. The Tyrolese guides make a practice of climbing two on a rope; that is, one guide and one tourist. To an Englishman this is objectionable, as there is a strong possibility that a fall on the

part of either means disaster to both. Three or four on one rope are much safer. Two pairs in this instance were to make the ascent simultaneously, whilst the remaining four waited on the pass for their turn.

A start was made at 6 a.m. Without much difficulty the first ledge was reached. From this point a shallow perpendicular chimney stretched upwards for about 150 feet. This also is without serious difficulty to those used to the crags of Pillar Rock, Gable or Scafell. Then from the head of the Chimney it becomes necessary to "traverse" across the face of the rocks to the left, to reach the foot of another depression or chimney.

Firmness of grip, endurance, balance and steadiness of head are essentials for the safe negotiation of such passages as these. You can test for yourselves the feeling in a small degree if you can find a high brick wall, from the interstices of which the mortar has come away, leaving small ledges upon which the finger tips and the toes can find a precarious hold. You can progress if you keep an iron grip on every hold, and do not continually fancy you are falling off. The fact that on many peaks the drop would be hundreds, perhaps thousands, of feet if you fell, cannot fail to affect your mind in tight places.

Again slowly and cautiously negotiating the second chimney, a spot was reached where, by holding on with the hands, there was no danger of slipping, and one could rest for a breathing space. Six hundred feet below, on the dip between the two peaks, the waiting quartet could be seen. They were lying on their backs, as this was the only comfortable way of viewing the ascent. Occasionally they gave a cheer or shouted out something which we seldom distinguished.

The last portion of the peak consists of a series of chimneys, some buttresses and open slabs of rock, and one emerges on to the tiny summit through a kind of hole in the floor of the peak top, breathless and exhausted.

The ascent takes from four to five hours, the height of the summit being about 2,500 feet above the little saddle, and 9,700 feet above sea level. The top resembles the roof of a castellated tower which is falling into decay. Pieces of splintered rock are continually breaking off and falling away, and one has a very insecure feeling on this little pinnacle.

In descending, the tourist goes first, the guide following, so as to hold him in case of a slip. In crag climbing one does not often make steep descents, as in England there is generally an

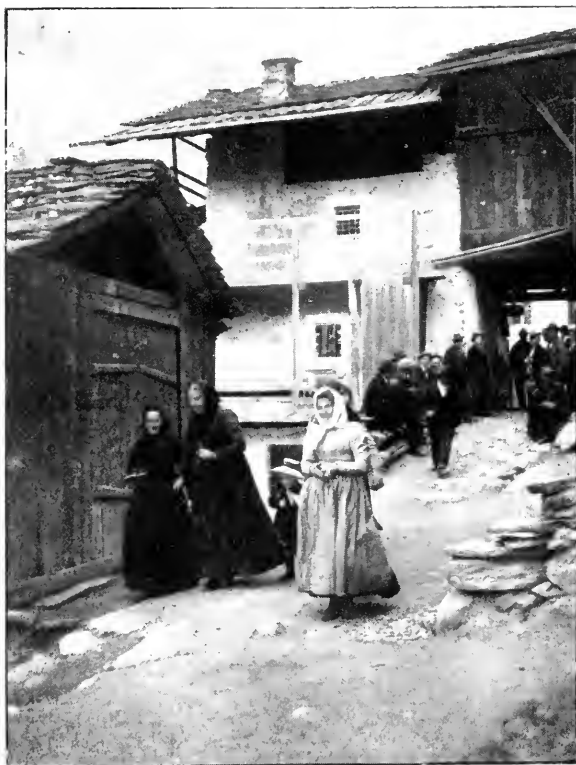


Fig. 9. Degioz, Val Savarauche.



Fig. 10. Cortina d'Ampezzo.



easy path off the mountain. Hence such a descent as the one on the south side of the *Kleine Zinne* is very trying to the nerves. You climb down a place like the corner of your dining-room, then you stretch across to the mantelpiece along which you sidle carefully. Then let yourself down so as to have both feet in the fireless grate. This finds you at the head of another rock chimney twice the height of a house, and so on. All the time you have the feeling that you are about to jump into space. Then is the time to be proud of a steady head, which will ensure safety.

About half an hour below the summit is the "chimney breast," and the newcomer is entitled to expect a call upon his gymnastics. It is a difficult bit certainly, but the simile of mantelpiece and the firegrate will serve to indicate its nature, if you can in addition imagine 2,000 feet of almost perpendicular rock below you instead of a dining-room floor.

Thus you work carefully from point to point. From the foot of a crack in the rocks you step on to a very narrow mantelshelf at the base of a sheer wall of rock running away round a corner to the left. It is a little awkward to negotiate, and one feels inclined to crawl on all fours for safety as the rock wall catches the shoulders and occasionally seems to give a distinct push. The safest plan is to face the rock and copy a limpet, but there is no handhold. Sidling along very carefully to the end of the shelf (it averaged 15 inches wide, not 9, as *Sanger Davies* says), one finds it comes to an abrupt termination. A little buttress of rock coming down almost to the ledge seems to cut off the climber from the face of the peak. By first kneeling on the ledge face to the wall and then carefully sitting down on the edge of the ledge it is possible to reach a hold with the left foot. Holding on to the little buttress, you can draw yourself under it and inwards towards the rock face where there is a secure place.

Behind, the guide was coming along at a careful pace. Before he got to the end, however, he stopped, and, in reply to a query, said this was the famous "traverse." Whereupon a derisive yell held up *Sanger Davies* to scorn. There are half a dozen tighter spots in the *Lake District*! *Mr. Davies* must have dreamed his sketch after the climb.

The rest of the descent was not easy, but offered no real difficulty, and a snow gully at the foot of the rocks was reached in about two hours from the summit. Here the scarpetti were

discarded and the hobnails once more put on, and after the safe arrival of the second detachment of the party, the remaining liquid was drunk in honour of the peak.

The exhilaration of the successful climb barely lasted out the 16 mile walk back to Cortina, past the charmingly situated Lake Misurina and by the famous Tre Croci Road.

A description of climbing in the Swiss Alps is usually a record of expeditions requiring considerable previous preparation and training, on account of the constant and long-drawn-out demands upon the powers of endurance and nerves of the climber. To brace oneself up for a three hours' strenuous rock climb is a difficult matter, but seems to require less effort than to undergo the discomforts of an open air sleeping place, with the temperature considerably below freezing point, followed by 12 or 14 hours of hard walking. The long, steep snow slope in the early hours of the morning, the passing of the ice fall of a glacier, the cutting of steps across the ice-filled gully, the negotiation of a sharp and steep rock ridge towards the summit of the mountain in a high wind and in intense cold, the necessity for keeping a sharp look out for hidden dangers, such as concealed crevasses or falling stones, and the constantly changing conditions as the day advances and the sun gains power, all combine to make the ascent of a difficult mountain in the Swiss Alps an undertaking not to be entered upon without every possible precaution against accident. It is often necessary to minimise the burdens borne by the climbers, whereby the food has to be dealt out at each meal with a careful hand. But perhaps of more importance is the question of drink. With a spirit-stove it is of course possible to melt snow and so obtain hot liquids to drink, but spirit-stoves are not often taken on an expedition and very few turn out successes when the test is put upon them. The usual drink of the guides is the white or red wine of the country, but experienced climbers have many pet beverages of their own, such as cold tea or coffee, or fancy mixtures of various kinds. The advent of the Thermos flask is most welcome to the mountaineer, although its weight is out of proportion to the quantity of liquid it holds. It often happens that if a party is overtaken by bad weather during an expedition which delays them for several hours their first discomfort is that of being unable to satisfy their thirst. Even in the absence of any unusual delay mountaineers, in however good a condition they may be, suffer on hot days from intense thirst,

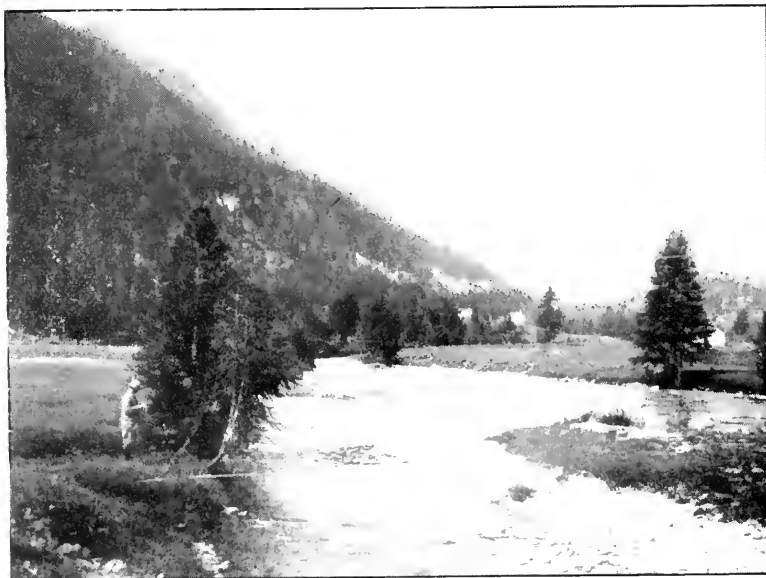


Fig. 11. Ceresole, Val d'Orcò.

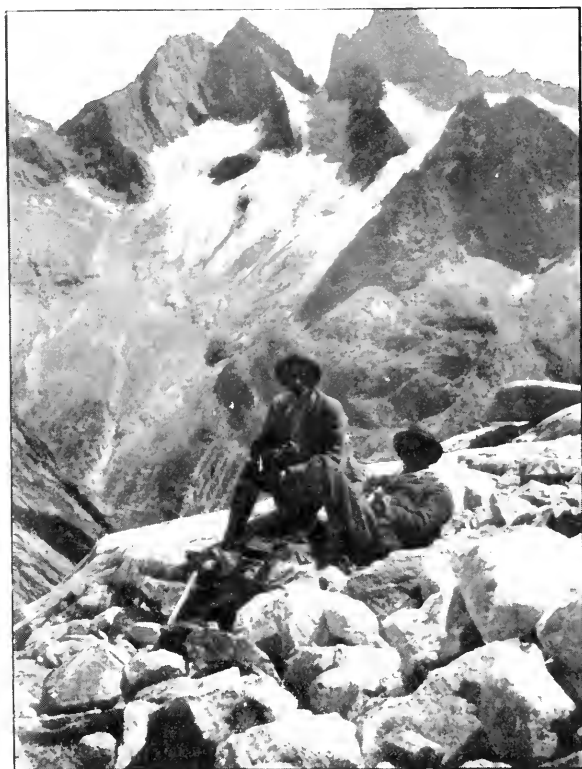


Fig. 12 Grande Ruine from above Val des Etangons, Dauphiné.



partly owing to the nature of the exertion and partly owing to the effect upon the throat of the dry air near to the snow level. Often the dryness of the palate is so great as to make it difficult to speak distinctly.

The climbing of a snow mountain, broadly speaking, divides itself into three stages. First, the trudge from the village in the valley up the lower and very often steep slopes of the mountain to a mountain hut. Secondly, the crossing of a glacier and ascent of a snow field; and, lastly, the scaling of the citadel of the mountain by the ascent of the rock or snow ridge leading to the summit. Generally speaking, these conditions in the order named are to be found upon most of the great peaks of the Alps in the course of ascending them by what is called "the ordinary way."

Weather is a most important factor in undertaking a climbing expedition, that is, not merely the weather during the ascent, but the conditions which have existed during the previous days or weeks. One party may make an ascent and find the ice to have melted from the rocks near the summit, the snow to be firm and hard, the crevasses to be uncovered by the snow, and in fact all the conditions favourable; whilst another party may meet with difficulties caused by the contrary state of weather at almost every step. This variety is one of the charms, and a climber may ascend the same peak many times and find differences caused by these changing conditions on each ascent.

The knowledge and skill required for the scaling of a rock peak in the Dolomites may be acquired in our own country, that is to say, amongst the crags of Cumberland or the buttresses of Snowdon, and in the Coolin Hills of Skye; but it is impossible to acquire a knowledge of snow and ice without actual experience in the Alps. The use of the ice axe, the correct method of tying the rope, and the order and arrangement of the party upon the rope, the points of attack for the ascent of a mountain, the timing of the start so as to avoid the danger caused by the noonday heat of the sun on the snow and ice, and many other important items of knowledge go to make up the craft of mountaineering, and in those who pursue it there must be added good bodily health, nerves of steel, and considerable powers of endurance.

Under these circumstances there can be no finer or more health-giving sport in the world.

In the 800 miles of highlands from Tyrol to Dauphiné there

is scarcely a single peak which has not been ascended. Those belonging to the advanced school of Alpine climbers are extending their explorations in the Caucasus, the Himalayas, the New Zealand Alps, the Rocky Mountains, the Andes, the Lofoten Islands, Africa, Spitzbergen and other parts of the world. The passion for conquest of new peaks will continue in the breasts of true mountaineers till every summit, even that of Gaurisankar has been trodden by the foot of man.

It is impossible to account for the extraordinary fascination which the Alps exercise over those who have once seen them, but it may perhaps now be more easily understood how men and women who have once penetrated into the inmost secrets of the mountains and scaled their lofty summits again and again return to the pursuit of mountain climbing so long as health and circumstances permit.

THE NINTH INTERNATIONAL GEOGRAPHICAL CONGRESS, GENEVA, 1908.

REPORT BY HORACE C. MARTIN, F.R.G.S., DELEGATE OF THE
SOCIETY.

(Read to the Society in the Geographical Hall on Tuesday,
March 9th, 1909.)

THE Ninth International Geographical Congress was held in Geneva in 1908, under the presidency of Dr. Arthur de Claparède, President of the Geneva Geographical Society. The first meeting was held in the Aula, or Great Hall of the University, on Monday, July 27, and the sessions were continued until August 6. The Congress was followed by an "Encyclopédique" Excursion, extending from Friday, August 7, to the Thursday following, so that those who attended the meetings of Congress and the Excursion were from home at least three weeks. This seemed, to many, much longer than was necessary, and was probably the cause of some, who had entered their names, taking no part in the Congress.

There were about 700 members and associates, besides a number of delegations; and those who took part in the meetings were representatives from all the important countries of the world. There were 232 papers accepted by the Selection Committee, and these were divided and arranged under the following fourteen heads, with the name of the President of each section:

1. Mathematical Geography and Cartography: Lieutenant Colonel Held, Bern.
2. Physical Geography—General: Professor A. Penck, Berlin.
3. Volcanology and Seismology: Dr. Johnston Lavis, Beaulieu.
4. Glaciers: Prof. Jean Brunhes, Freiburg.
5. Hydrography, Potamography and Limnology: Prof. Forel, Lausanne.
6. Oceanography: Prof. Krümmel, Kiel.
7. Meteorology, Climatology and Terrestrial Magnetism: Dr. Hellmann, Berlin.
8. Biological Geography: Dr. Casimir de Candolle, Geneva.
9. Anthropology and Ethnography: Prof. Lenz, Prague.
10. Economic and Social Geography: Prof. Eug. Oberhummer, Vienna.
11. Exploration: Prof. O. Nordenskiöld, Gothenburg.
12. Geographical Education: Prof. Davis, Harvard, U.S.A.
13. Historical Geography: Prof. Cordier, Paris.
14. Rules and Nomenclature: Commander Roncagli, Rome.

This is a long list and follows the arrangement of the last Congress; but, I must confess, I quite fail to see the utility of such a division, and think the sections could be reduced, with advantage, to half the number. Among the many objects of a geographical congress there should be the collecting, discussing and the formulating of the latest and best obtainable information on the various subjects, and the creating of a widespread public interest in geography, and in the geographical societies and their work. I do not think the Congress is as successful as it might be in either direction. The congresses are not frequent enough to maintain the interest of the general public for any length of time; and the multiplicity of meetings, due to the number of sections, detract from their usefulness, and cause some to appear of little importance, if judged by the number taking part in the proceedings.

The papers from England were few in number, and some of these were not read owing to the absence of the authors; and although many names appeared in the list, England was not well represented in the meetings, and the fact was freely commented upon by many of the delegates.

There was ample accommodation for the various meetings in the Hall and numerous rooms of the University, and at the Athénée, which is in proximity. The committee had arranged that the general meetings, conferences and the papers considered most interesting, generally, should be taken in the morning, in the Hall of the University, the sectional papers being taken in the afternoons. The sections with odd numbers were taken the one day, and those with even numbers the following day, and so on alternately.

The opening of Congress was quite an imposing ceremony. It was a lovely day and the hall was well filled with a very enthusiastic audience. On each side of the presidential chair stood an usher in uniform—one representing the Swiss Federation, and the other the canton of Geneva. Dr. Ernest Brenner, President of the Swiss Confederation, extended a hearty welcome to the members of Congress, and said that, although he could not promise them the lavish entertainment given in some of the large cities, he did assure them of a warm welcome and cordial hospitality from the people of Geneva. In his remarks, he referred to the Fifth International Congress held in Switzerland, and its influence on the progress made in geographical education in the schools. He spoke with pleasure of the large sums of money spent both by the Confederation and the Cantons in the interest of geography and education generally, and referred to the preparation of a valuable atlas for use in the secondary schools, which would be followed by one for the primary schools.

Dr. Arthur de Claparède, President of the Geographical Society of Geneva, and President of the Congress, expressed his thanks for the warm welcome extended to the members, and

the honour shown them by the authorities. He then briefly reviewed the work of previous congresses, and hoped the ninth Congress would be a very successful one.

This was followed by a few remarks from delegates representing Governments, Universities, Geographical Societies, and other organisations represented at the Congress. The opening ceremony over, business was at once commenced, and the first paper was on the evidence in support of the account of the periplus of Africa, by the Egyptians under Pharaoh Necho II., in the 7th century before the Christian era, as given by Herodotus. This was read by M. Alexandre Moret, Paris, who referred to the two recently discovered scarabs, which, he contended, recorded the events in hieroglyphic inscriptions, and supported the account. The paper was very interesting, but did not meet with unanimous approval.

In the afternoon the odd numbered sections were taken in the various rooms of the University with the exception of Meteorology, Climatology, and Terrestrial Magnetism. This section was taken at the Athénée.

In the evening the President, Dr. Arthur de Claparède, gave a dinner to the honorary members of Congress at the National Hotel.

On Tuesday morning M. W. Rosier, Councillor of State, and President of the Department of Public Instruction for the canton of Geneva, read a paper on "The Proper Domain of Geography as a Branch of Education." His address was most interesting, and was very well received. The map of Switzerland, used to illustrate his remarks, was very good, and worthy of all the praise it received. When he remarked that this splendid map was supplied to all the schools in the confederation by the authorities, it must have caused many in the audience to compare the action of their own Governments in such matters. M. Rosier contended that Geography was "The reading of maps, and the scientific description of the earth, that is of the various constituents—animate and inanimate, the combination and interconnection of which determine the actual physiognomy of the globe; that it is divided into mathematical, physical, biological and human geography, the human geography being subdivided into historical, political and economic." This description was advanced as a definition of geography by the lecturer, who proposed it for adoption by Congress. It led to a long discussion and much criticism in one of the sectional meetings later on, but resulted in nothing definite.

Professor Flauhault, Director of the Botanical Institute, Montpellier, read a most interesting paper on the importance of botanical geography. In a very able address, he described the various ways in which the subject could be made the means of increasing the earth's resources; and earnestly asked members to lose no opportunity of pointing out its value, and of helping

forward this very important work. This was followed by an able address by Professor Oberhummer of Vienna on Leonardo da Vinci and the Art of the Renaissance in relation to geography.

The afternoon was devoted to the consideration of the even numbered sections: and in the evening M. Alfred Bertrand received members at his residence. Considering the trouble and expense, it must have been a great disappointment to the host and hostess, as it was to the visitors, when the splendid arrangements were spoiled by the inclement weather. One point of great interest in this visit was the private museum which formed one wing of the building, and contained a large number of objects and specimens obtained by M. Bertrand in his various expeditions.

Wednesday morning was devoted to lectures and discussions on Alpine glaciers. Professor Penck, Berlin, read the first paper, "The lower limits of perpetual snow in the Alps during the Glacial Epoch." His remarks were based on personal observations, and from them he was induced to believe that the level of glacial névés, at that time, was not much higher than at present. He contended that it was only the lower parts of the glaciers which extended far beyond the present limits. He also stated that the difference could be explained by assuming a slightly reduced temperature during the Glacial Period, rather than by an increase in the snow precipitated. In the discussion which followed, several delegates supported the views of the professor.

Professor Brunhes, Freiburg, then read a paper, on Glacial Erosion, in which he drew attention to the difference between the shape of glacier beds and torrent beds. Illustrating his remarks by means of lantern slides, he pointed out that the glacier beds were rounded, or U shaped, whilst the torrent beds were V shaped. He contended that glaciers were not simply masses of ice, but a mixture of ice and water; and that the action of the water in conjunction with the ice was quite as powerful an erosive agent as the ice itself. The lantern slides were well selected and gave support to his views regarding the action of ice and water.

In the evening there was a garden party in the park and museum at Ariana, given by the Council of State, Geneva, and the Council of the town of Ariana. Special electric cars conveyed the members to the park, and the whole arrangements and entertainment were highly appreciated by all who accepted the invitation.

Thursday was devoted to a tour of Lake Geneva. Special boats were chartered and Congress had the pleasure of a most enjoyable day's excursion on the magnificent lake, favoured with ideal weather.

It would be difficult to over-praise the charms of this beautiful

lake, with its ever-changing aspect of scenery—in turn,—charming, wild, imposing and fascinating. The lake is over fifty miles long, and at its widest part eight miles across, covering an area of ninety square miles.

On the Swiss side, from Geneva to Lausanne, there are gentle sloping meadows, orchards and vineyards with half-hidden villages and villas among the rich forest trees. Here and there bold castles stand out on the hills, gradually rising in terraces to the Jura mountains in the background. Opposite, on the Savoy side of the lake, between Evian and Geneva, the land rises more gradually up to the high peaks of the Alps—the land being covered with thick forests and rich orchards and meadows. The east end of the lake is more imposing. The hills are steeper and the mountains closer to the shore, while the views are fascinating in their bold magnificence. The river Rhone enters the lake near Bouveret, after passing through a narrow, marshy valley, and it was interesting to watch the muddy stream floating in the clear blue water of the lake. This part of the lake is being filled up with the *débris* deposited from the river, Port Valais being some distance from the lake.

The shores of the lake contain a large number of villages and towns, but I can only select a few on account of the limited time at our disposal.

Nyon is picturesquely situated above the lake, and is noted for its castle and an important collection of antiquities in its museum. The district is the centre of noted vineyards—those of La Côte, 9 miles long, being near.

Ouchy, the port of Lausanne, is an important and rapidly growing town. It is noted for its position on the lake, for its boat-building yards, and for its schools.

Lausanne is a beautiful town built on five hills, and commands magnificent views of lake and mountains. It is noted for its steep streets, its magnificent cathedral, fine old castle, museums, University and handsome hotels and buildings. It is the capital of the canton of Vaud, and is, with its various schools and colleges, one of the chief centres of learning in Switzerland.

Vevey is another favourite centre for interesting excursions. The scenery is much bolder, and from this point, fine views of mountains, especially the Dent du Midi, are obtained. In the neighbourhood are the famous vineyards of Lavaux, which extend some ten miles.

Montreaux is admirably situated for visiting some of the finest scenery, and points of interest about this part of the lake, as Clarens, Les Avants, Glion, Caux, Rochers des Naye, etc. It is a new town and enjoys a notably mild climate; and possesses luxurious hotels, handsome buildings and shops; and has a wide reputation for its educational advantages.

Territet is a continuation of Montreaux, and is near the castle

of Chillon, which is supposed to date back to the 8th century. The larger part, however, appears to have been built in the 13th century. Here the heroic Bonnivard, Byron's Prisoner of Chillon, was confined in its dungeons for six years. The scenery of this part of the lake is very attractive, and the view over Chillon to the Dent du Midi forms a beautiful picture.

The ascent to Glion, Caux and the Rochers des Naye may be made on the rack and pinion railway, and marvellous views obtained from almost every point in the journey—that from the summit being magnificent.

Bouveret is near the mouth of the Rhone, and at the foot of the mountains. A great avalanche fell here a few years ago.

Evian is a fashionable French watering place. The mineral waters have a high reputation for those suffering from gout, etc. The Bath House is a very fine building, and the Casino and theatre occupy a prominent position on the margin of the lake.

Thonon was the last calling place, and from this point we were about two hours in reaching Geneva. As the evening advanced, the mountains faded in the mist of night, and there was a stillness along the shores, which a short time before were so full of life and beauty. The view of Geneva, as we entered the bay, was very beautiful, with its grand display of brilliantly illuminated buildings, and formed a fitting climax to an excursion as successful as the variety of scenes had been beautiful.

Friday was an important day in the history of the Geneva Geographical Society, for it was the fiftieth anniversary of its foundation. Business was suspended, and congratulations were offered in various ways. A letter of congratulation was read from the King of Roumania, and another from the King of the Belgians. Professor Oberhummer then presented to the Geneva Geographical Society a copy of the historical maps, prepared by the Vienna Geographical Society in honour of its fiftieth anniversary in 1907. This was a splendid volume and the Geneva Society will have every reason to be proud of its possession.

A number of communications were then read, including one from Professor Peary, which was read by Commander Cagni, the explorer, who can claim the honour of having made the nearest approach to the North Pole in the Old World.

Mr. Tolmachef, St. Petersburg, reported a proposed expedition to the Taimur Peninsula and Cape Chelynokin. The expedition is to set out in 1910, and is necessary because of the destruction by fire of the records of the last survey, and the desire to have an exact topographical record of this region.

An account of the International Polar Commission, founded at Mons in 1905, was then given by M. Lecoq, Belgium, and the following resolution approved:—"That the Ninth International Geographic Congress, held in Geneva in 1908, expresses the hope that the Governments interested will consider with the

utmost good will the request which will be addressed to them by the provisional bureau of the International Polar Committee to give their support to that Committee."

In the evening there was a reception and garden party by M. Gautier at Coligny. His residence stands in a delightful position, overlooking the Lake and City of Geneva, and with charming views of the Jura Mountains and the Mont Blanc Range. The beautiful surroundings, the lovely evening and the lavish hospitality combined to make the function most enjoyable.

Saturday morning was devoted to the consideration of the Antarctic Regions, and the principal lecture was an account of the Swedish Expedition to the Antarctic Regions by Professor Otto Nordenskiöld. This lecture was illustrated by a very fine set of slides, and some well prepared maps. It was a most interesting lecture and the audience fully appreciated it. Mr. Henryk Arctowski gave a review of a few of the expeditions in the Antarctic regions, and drew attention to some of the problems, arising out of the expeditions, which need solving. At the close of the session there was a representation, by the aid of the cinematograph, of an eruption of Stromboli.

The attraction of the evening was a promenade concert in commemoration of the 617th anniversary of the foundation of the Swiss Confederation. Great preparations had been made. The gardens, quays, bridge, boats and the villas along the lake were decorated and illuminated, and boats were chartered to make a tour of the little lake. The result, however, was very disappointing to all who took part in the proceedings, for the night turned out very cold and wet, and the wind blew the Chinese lanterns about so much that most of them either went out or caught fire. When we arrived at the landing stage about 11 p.m., I think most of the party were glad to leave the boat.

On Monday, August the 3rd, Herr Filchner, a German officer, gave an account of his journey in Eastern Tibet; and this was followed by a further consideration of the Antarctic regions.

In the evening a performance was given in the Grand Theatre in honour of the Ninth International Geographical Congress.

Tuesday morning's session was made important by a paper from M. de Lallemand, Paris, on the Periodic movements of the earth's crust being analogous to the tides. In a most interesting address the lecturer described how the apparently solid earth is thus subject to daily oscillations rising and falling twice in every 24 hours. It has been known for some years that there was an earth movement, but the movement was so small that there was no reliable means of calculating the amount. The difficulty has now been overcome by the untiring efforts of Dr. Hecker at the Geodetic Institute at Potsdam. The method of calculating the movements consists in recording the deviation in the oscillations of a pendulum from the rate calculated for an assumed perfectly rigid earth. Dr. Hecker's apparatus is in a space cut

out of the side of a well 80 feet below the earth's surface, and he has continued to record observations by means of photography day and night for six years. From these observations it is possible to determine how compact the earth is, and it is found to be about as stiff as if it were made of steel throughout. The vertical rise and fall can be roughly inferred from Dr. Hecker's observations, and is given as four or five inches in our latitude. These movements are not noticeable, because we have no means of measuring them, any more than the rising and falling of the tides by a person on a ship at sea.

In the evening there was a Subscription Banquet in commemoration of the 50th anniversary of the Geneva Geographical Society.

On Wednesday morning Professor Blondel, Paris, read a paper on "Free Ports." After giving a brief account of the part played by free ports in history, he considered the work of modern ones, and compared them with those under a protectionist policy. Professor Oberhummer followed with a paper on the geography of great towns. In a very able and interesting address the professor pointed out the many conditions that influence the subject, and contended that it was of interest in Europe only since the Renaissance, as the largest towns in Europe before that time were only small when compared with some of the towns in China. The address was full of interesting matter and will prove most attractive reading.

A Grand Fête in honour of the Congress was given in the evening by the Association of the Interests of Geneva. The lower part of the lakes, quays and gardens were illuminated, concerts were arranged, and there was a grand display of fireworks.

Thursday, August the 6th, was the last day of Congress, and the members met for the consideration of resolutions and the usual closing scenes. During the Congress a large number of resolutions were adopted, some of them practically the same as those considered at the last Congress. At the second meeting the following resolutions were unanimously adopted with regard to the production of a map of the world:—

"Whereas the map-making offices of several nations are engaged in compiling maps, to be published on a uniform scale of 1:1,000,000, under uniform agreements as to limits of sheets, etc.

"Resolved that it is desirable, for manifest reasons, that a uniform set of symbols and conventional signs be adopted by all nations for use upon these maps.

"Resolved that an International Committee should be formed to consider the question, and that, in order to provide a basis for discussion, each Government and other map-producing office should be requested to supply to the Committee, within the next

twelve months, specimens of the 1: 1,000,000 maps which have been produced."

A Provisional Committee was appointed to consider the subject, to report to Congress, and make any necessary recommendations. The Committee adopted the following recommendations: "that the thanks of Congress should be expressed to the Governments of France, Germany, the United Kingdom, and the United States, for having begun the execution of this important work, and that the results of their efforts should be communicated by the Congress to the other Governments interested in cartography."

The Committee also proposed that the following recommendations should be communicated in the name of the International Congress to the Governments interested and to the Geographical Societies represented at this Congress:—

"1. In accordance with the recommendation made by the International Geographical Congress held at London in 1895, each sheet of the map should embrace an area of 4° in latitude and 6° in longitude. The limiting meridians of the sheets should be at successive intervals of 6° reckoned from the meridian of Greenwich, and the limiting parallels at intervals of 4° reckoned from the equator. The meridians and parallels should be drawn on each sheet for each degree.

"2. The projection, according to the recommendation of 1895, should be polyconic, that for each sheet being constructed independently on its middle meridian.

"3. A kilometre scale should be given on each sheet. An additional scale in miles might be added if desired.

"4. The altitude above sea-level should be inserted in metres. Heights in feet might be added if desired.

"5. Contour-lines should be marked at vertical intervals of 200 metres, starting at sea-level; but in very mountainous districts the vertical intervals might be greater, providing that they were multiples of 200 metres. In very flat countries additional contour-lines might be given provided that the intervals were fractions of 200 metres. These lines should be drawn in brown. Minor features which cannot be indicated by contour-lines should be shown by shading. As a complement to the contour-lines, it is desirable that the successive zones of altitude should be indicated by a system of colour tints. A definite scale of tints should not be decided upon until after the preparation of specimen sheets on the general lines of these recommendations.

"6. Generally water should be shown in blue, but a distinction should be made between perennial and non-perennial streams. The depths of the sea and lakes should be shown by blue contours, the vertical intervals being multiples or fractions of 200 metres. Features which cannot be shown by the contours may be shown by blue shading. The datum level in each case is to be the surface of the sea or lake. In the case of rivers,

rapids and other obstructions to navigation are, as far as possible, to be indicated.

" 7. Roads and tracks should be divided into two classes—those which are suitable for wheeled traffic, and those which are not.

" 8. The lettering should be in varieties of the Latin characters. A distinction should be made between the lettering applied to cultural (artificial) features and the lettering applied to natural features. In those cases in which the Latin characters are not in use in the country in which the sheets are produced, two editions should be published, one the national edition, and one the international.

" 9. A clear distinction should be made between the representation of features known to have been surveyed with sufficient accuracy to render any subsequent important alteration improbable, and the representation of those features which have been imperfectly surveyed or only roughly explored."

Other proposals were: the nominating of a committee to consider the establishment of an International Cartographic Association; the publication of a *répertoire graphique* showing the progress of exploration in a simple manner; the establishment of an International Bureau to answer geographical inquiries in the interests of commerce; the completing of the systematic exploration of the polar regions and utilising of the information gained in the recent Antarctic expeditions; the desirability of geographical societies endeavouring to interest their Governments in the reproduction of the cartographic remains of Antiquity, the Middle Ages and the Renaissance.

Invitations were received from several towns for the next Congress, and after some discussion the meeting decided on accepting the invitation from Rome. The Congress to meet in 1911.

In the evening an official dinner was offered to the delegates by the Council of State and the Council of the city. This was given in the foyer of the theatre, and was an unqualified success.

The sectional meetings were numerous, and a large number of papers were considered. Only to give the titles of the various papers with the names of the authors would require several pages and would serve no useful purpose. All were prepared by experts who had carefully considered their subjects, and thoughtfully prepared the matter; and they contained the latest and best obtainable information. Many were read by enthusiasts, delivered with eloquence, and were received with marked approval. Others, although not so well delivered, were put forward by earnest and capable men. When the papers are published, and can be carefully considered apart from the distracting influences of a great Congress they will prove valuable and instructive. I have no hesitation in saying the high standard of excellence in the preparation of the papers, and

in the delivery of the addresses, and also the interest shown in the general meetings, compared favourably with the record of last Congress.

EXCURSION.

The Encyclopédique Excursion extended from Friday, August the 7th, to the Thursday following, and was under the direction of M. Guillaume Fatio and M. Francis Reverdin. The course taken was from Geneva to Chamonix-Martigny, Zermatt, Brieg, Rhone Glacier, over the Grimsel Pass to Hauddeck, Meiringen, Brienz, Interlaken, Spiez, Montreaux and down the Lake of Geneva, following the river Rhone from Vernayaz to its source, and the river Aar from the Grimsel to Lake Thun.

From Geneva to Chamonix is 55 miles—the first 43, to Le Fayet, St. Gervais, being by train, and the last 12 miles by the electric railway. The journey was full of interest on account of the constantly changing scenes, and the charming attractions on every side, almost every point being the centre for some delightful excursion. As we made our way up the Chamonix valley, which is some 15 miles long, and through which flows the rapid river Arve, we had a view of Mt. Blanc, and a grand succession of mountain peaks and glaciers on the right.

The village of Chamonix is in the French department of Savoy, and is grandly situated in close proximity to lofty mountains and wonderful glaciers. It stands 3445 feet above sea level, and is made up of a few long streets, in which châteaux, shops and hotels are mixed together. The population is small, but during the summer large numbers of visitors and tourists are attracted to the spot. The church occupies a position at the end of one of the streets, with Mt. Blanc acting as background and forming a fine view.

There is a bronze monument in the village square representing Jacques Balmat, the Swiss guide, pointing out the summit of Mt. Blanc to the great naturalist, H. B. de Saussure, who made the ascent in 1787, under his guidance, and was successful in obtaining valuable scientific information. The first recorded ascent was made by Dr. Paccard and Balmat in 1786.

The chief attraction of the district is Mt. Blanc, with its magnificent heights towering high above the line of perpetual snow, and its wonderful glaciers extending far down into the valley below. The group of mountains—Mt. Blanc—is an immense mass of rock stretching from south-west to north-east for some thirteen miles, and is about six miles wide. The whole mass rises a thousand feet above the snow line, and some of the peaks are 12,000 feet above Chamonix. The scenery of this mountain mass is a wonderful combination of Alpine attractions on the grandest scale. There are lofty peaks covered with snow, wide seas of ice, bright glistening glaciers, lofty, wild looking and awe inspiring rocks, enormous crevasses, pine forests reaching high up the slopes and varied luxuriant vegetation lower in the valleys—all combining to make a marvellous scene and a wonderful impression.

The ascent of Mt. Blanc, although a long fatiguing undertaking, offers no great difficulty to the experienced climber, and each year adds to the list of those who have successfully performed the task.

A number of attractive excursions can be made from Chamonix by those who have the time, and all are worth the effort required to carry them out. The Glacier des Bossons, the ice cave, and the Gorge of the Diosay are within easy walking distance. The Bosson Glacier is one of the most picturesque of those from Mt. Blanc. It extends low down the valley and appears quite near the river Arve. The glacier forms a pretty picture, glittering in the sun, and flashing out its whiteness from the midst of the varied vegetation, the background being made up of the dazzling white peaks of Mt. Blanc standing out against a blue sky.

For those with only a short time at their disposal, the ascent of Montanvert (6302 ft.) is the one excursion not to be missed. A mountain railway is being constructed from the village to the Mer de Glace, and we, as a party, were invited to make the first public ascent, as far as the work was completed. The offer was accepted with pleasure, and the ascent was made in less than half the time it would require to climb the mountain and certainly with far less trouble. The road passed through a pine forest, and the debris of avalanches, and at various points delightful views of the mountains and valley, were obtained. We had some distance to walk after leaving the train before we saw the hotel and the Aiguille du Dru.

It was a very hot day, and the distance seemed long; but I think all forgot they were tired when they came in view of the Mer de Glace. This is one of the marvels of Alpine scenery. It is the accumulated snow of ages, and extends for several miles along the valley, towards the Monarch of the Alps. The Mer de Glace is the most important glacier in the district, and from the hotel, 300 feet above its surface, the mass appears like a wild rushing, foaming cataract suddenly changed into ice, with thousands of billowy forms intersected in all directions by rents and fissures, making it unsafe to cross without the assistance of a guide. As the afternoon sun gradually came opposite, and cast its rays over the mass, and along the valley the sight became gorgeous. On the left the glacier descends rapidly down the valley and is lost to sight, as it sinks among the forest vegetation. In front and to the right lie the Mer de Glace, numerous snow-covered mountains, glittering in the radiant sunshine, and lofty peaks of bare rock, so steep that the snow cannot rest on them. The scene is made more impressive by the death-like silence around, broken only by the rushing of water down some deep dark abyss, or the distant rumbling caused by the fall of some avalanche, as it drops from the overhanging rock into the valley below with the noise of thunder.

This marvellous scene was of short duration, for a mist came driving down from the mountains, and the view rapidly changed, and several of my snap-shots were spoiled. The scene so wonderfully attractive and fascinating a few minutes before became quite awe-inspiring.

The dark masses of rock thousands of feet above the glacier seemed as though they were about to topple over and crush all below, while others seemed to advance in the thickening mist as if bent on sweeping the spectators into the sea of darkness below. The mist soon changed to rain and the wind became very cold. I think all were glad to get back to the village, where the sun was still shining, although had the scene continued as when first viewed, I am sure it would have been left with reluctance.

We left Chamonix early on Saturday morning, and arrived at Martigny in about four hours. Some very fine scenes were passed, including glaciers, mountain peaks, gorges and very beautiful country. Argentière is noted for its grand glacier sweeping down to the village, with the Aiguille du Chardonnet 12,000 feet on the one side, and the Aiguille Verte 13,500 feet on the other. Châtelard was soon after reached, and from this point the journey may be continued by rail, or by the Tête Noire Pass.

We continued our journey by railway to Vernayaz where we joined the river Rhone. The district is not a healthy one and many of the inhabitants suffer from ague, and a growth called goitre. A short walk from Vernayaz leads to the Gorge du Trient, a very imposing ravine through which the river flows, between rocky precipices and recesses never penetrated by the sun. The Pissevache Cascade is another attractive spot only a short distance from Vernayaz.

Another route between Chamonix and Martigny is by the Col de Balme. The views of Mont Blanc and the valley, the mountains of Valais and the Bernese Oberland, the sloping forests and shining glaciers form many delightful pictures.

Martigny was soon after reached. The village is not of great interest in itself, although it is very old, and has played an important part in the history of the district, the castle standing high above the Rhone and commanding the entrance to the St. Bernard and the Tête Noire Passes, where many fierce conflicts have taken place. In 1818 the village was nearly destroyed by the overflowing of the river Dranse, and traces of the flood are still to be seen on the walls of some of the buildings. The roofed wooden bridge over the river is interesting and peculiar to Switzerland. Martigny is, however, delightfully situated, and a good centre for some grand excursions.

From Martigny to Visp the journey was by the side of the Rhone, and the scenery one continuous succession of high mountain peaks, deep gorges, through which the river rushed in its wild career, and broader parts where the river spread out into placid streams, uniting again to rush through some narrow gorge in the rocks, or make a mad leap into a valley below. Sion stands about midway between Martigny and Leuk, and occupies a commanding position, with its castles and fine buildings, over the valley. From Sion the journey was continued along the Rhone valley as far as Visp, where it was left and the route continued by the side of the river Visp, which flows through a richly wooded gorge. The road in places was almost like a

switchback and the cog wheel system was brought into use as we ascended steep gradients or dipped down some slope. We passed through long tunnels, over viaducts, through fertile vales, pine forests and wild ravines and obtained magnificent views of mountains, deep gorges, glaciers and waterfalls. As we neared Zermatt a narrow defile was entered which led into the glacier basin of Zermatt.

Zermatt is a small, old-fashioned village, 5500 feet above sea level. It has a population of about 1000, and occupies a delightful position in a pastoral valley. The buildings are a strange mixture of wooden houses and *châlets*, with a number of large white hotels standing out conspicuously among them. These black wooden buildings and the strange manner in which they are clustered together appear very strange to visitors from cities, but they harmonise with the surroundings better than some of the stone buildings. The way in which they are raised from the ground, too, is interesting. The basement is often used as a stable, and the upper portion rests on mushroom-shaped stones in order to prevent rats and mice gaining admission. Some of these *châlets* are large and several stories high, and many of them are ornamented with fancy patterns and carvings.

Zermatt is an attractive centre for tourists, and a favourite summer resort. Attractions abound on every side. In the valley and on the lower slopes of the mountains there are many wild Alpine flowers, and patches of the woolly edelweiss; and the district is noted for the variety and beauty of its insects and butterflies. The artist, geologist and the adventurous climber can each follow his bent with profit, but the greatest attraction is to be found in the combination of the magnificent mountains and glaciers. In the evening M. Fatio gave an address on the travels of Mr. Necker de Saussure in Switzerland.

Early on Sunday morning an ascent of the Gornergrat was made by means of the electric mountain railway. This is the second highest mountain railway in Europe. It is $6\frac{1}{4}$ miles long and rises 9312 feet, with a maximum gradient of 1 in 5. Fine views are obtained at different stages. The Findelen Bridge spans a deep gorge into which rushes a fine waterfall. The Findelen Glacier is also a favourite excursion, indeed the excursions seem almost unlimited. The train stops at the Riffelalp and Riffelberg stations, from each of which attractive excursions may be made. The Riffelalp and Zermatt Valley make a fine picture and give some idea of the heights of the mountain peaks, and the Riffelberg and Weisshorn show the wild nature of surroundings. The Gornergrat Station is near the top of the mountain, and a short walk soon conducts to the summit of the Gornergrat 10,290 feet above sea level. It is a rounded knoll about 50 yards across with precipices descending abruptly on all sides. The scene around was one of almost indescribable beauty. This is one of the few places among the Alps where an elevation of over 10,000 feet can be reached without difficulty, and the panoramic view obtained from the summit is unsurpassed by any in Switzerland. There is a continuous succession of snow-capped peaks, ice fields and glaciers all

round. On the right towers the magnificent Matterhorn 14,705 feet high—a stupendous mountain mass of bare gneiss standing in isolated grandeur, and rising 5000 feet above a natural glacier bed, which is 10,000 feet above sea level—then in succession there are the Breithorn, the Twins, Castor and Pollux, a little in the background Lyskamm, Mont Rosa, just in front and separated from the Gornergrat by the Gorner Glacier which winds down the valley at a considerable distance below, to the left the Cima di Jazi, the Stockhorn, the Mischabel with the Dom, 14,950 feet high, and the highest point in Switzerland. Down the Zermatt valley some distant peaks in the Bernese Oberland over the Rhone Valley are seen, and the circle is completed by the Weisshorn, Rothhorn, Gabelhorn and the Dent Blanche. Viewed as it was under a cloudless sky and brilliant sunshine the scene appeared extremely beautiful and fascinating.

Mont Rosa is 15,217 feet high and the second highest mountain in the Alps. Although higher than the Matterhorn it does not stand out so prominently, because of the number of high peaks surrounding it. The ascent of Mont Rosa is more dangerous than that of Mt. Blanc, and to reach the highest peak occupies 14 hours. On this mountain the beautiful fungus, called red snow, is common. The plant is of rapid organisation and consists of a round ball filled with a bright red jelly divided into separate cells. In the course of a day these cells burst, again reproducing themselves in the same rosy balls. In a few days the snow is covered with this strange vegetation for miles, producing very fine effects as it mingles with the pure white snow.

The huge Gorner Glacier winds round between the Gornergrat and Riffelberg, and Mont Rosa, Lyskamm, Breithorn, etc., and is joined by six other glaciers in its course, the river Visp issuing from its base.

The Matterhorn is more remarkable in shape and outline than either Mt. Blanc or Mt. Rosa, and although not so high it is far more difficult to ascend, and its list of victims is far more numerous than that of Mt. Blanc. In the village churchyard are the graves of Mr. Hadow, the Rev. Charles Hudson and the guide Michael Crox—three of the four who lost their lives on the Matterhorn in 1865. The body of Lord Francis Douglas, who fell with them, was never found. Mr. Whymper and the other two guides escaped by the snapping of the rope which was used in the descent.

In the afternoon this wonderful mountain was seen in all its impressive massiveness, for a party of five went for a walk beyond the Black Lake and the Chapel of S. Mary of the Snow, the first halting place in the ascent of the Matterhorn. Standing at the foot of the mountain mass one is impressed with the enormous size of this isolated piece of nature's handiwork, and with mingled feelings reluctantly turns from the scene of such terrible grandeur.

The hard walking and high elevation were too much for one of the party, and he returned early in the afternoon. It was late in the evening when we reached the village after nearly eight hours' walking, and I was very tired, and as wet as if the excursion had been made in

a storm. Later in the evening M. Fatio gave a lecture on Swiss Habitations, and illustrated his remarks by some lantern views. The subject was interesting and instructive, and described the varied constructions and arrangements, and the methods of Swiss decorations.

A short excursion, and one well worth making, is a visit to the Gorner Gorge, where some very fine rock scenes may be seen.

On Monday we left Zermatt, and as I left the hotel I had a grand parting view of the Matterhorn, which made me wish to prolong the visit. In retracing the Visp valley we had repeated the wonderful views of this delightful district. At the village of Visp, we entered the Rhone valley again, and after a short journey arrived at Brieg, a small town at the junction of the Rhone and the Saltine. Brieg is the centre for several excursions, and the station for the Simplon Railway. Here we had lunch, after which we took conveyances for the drive to Gletsch. This drive occupied some eight hours, with the exception of a short rest for refreshments at Fiesch. At the entrance to the village, a fine crucifix stands in a niche in the wall of a small building. These were met with at short intervals along the road, some large, others small, but all tokens of the religious character of the people. The church contained some beautiful work and proved very attractive.

It was late when we reached the hotel at Gletsch, after a long walk up the valley, and after dinner it was too dark to see anything or even walk more than a few yards from the hotel. The rushing of the Rhone and the roar of water falling in the distance were the only sounds that broke a most impressive silence.

Early on the Tuesday morning a visit was made to the Rhone Glacier, which is situated about half a mile from the hotel, and approached by the bed of the river. The path leads over snow, and among huge boulders and heaps of stones, between which the numerous streams from the glacier wend their way to join forces lower down. This immense glacier—the cradle of the Rhone—is 15 miles long, and nearly a mile wide in parts. It is difficult to form an impression of the magnitude of this enormous mass of ice and frozen snow, with its yawning crevasses. It is one of the grandest of Alpine glaciers, and presents a wonderful appearance as it lies glittering under a bright sun and between the two mountains, the Galenstock 11,800 ft. and the Gehmerhorn 10,500 ft., like a mighty waterfall, frozen in its wild rush over a steep precipice. A waterfall issues from the west side of the crevasse, and this is the source of the Rhone, which rushes down the channel and deep ravines it has cleft for itself between the mountains and huge rocks. An ice cave has been cut into the glacier, and although it extends some distance into the solid ice, it is as light at the end as though the passage were in glass.

These glaciers are very marvellous, and it seems almost incredible that such great masses of ice and snow should be in motion, gradually making their way down the valley until they reach below the snow

line and melt, or break away by their overhanging weight, and fall into the valley below.

The Grimsel Pass is the highway between the canton of Valais and the canton of Berne, and connects the valley of the Rhone and the valley of the Aar. The road commences at Gletsch, near the foot of the Rhone Glacier, and ascends to the summit of the pass in a number of zig-zags. At different points magnificent views were obtained of the Rhone valley, the Rhone Glacier, the Galenstock, the Furkahörner and the Furka Pass; and the Rhone Glacier from the last bend in the road shone out brilliantly under a blue cloudless sky.

At the summit we passed the Todtensee—Lake of the Dead—formed from the melting snow on the mountains around, and so named because of the dead soldiers thrown into it during the war between the French and Austrians in 1799. Although the summit is nearly 1000 feet lower than that of the Furka Pass, the scenery is bolder and more savage. There is an absence of vegetation and the snow is almost permanent.

Winding to the left fine views were obtained of the Finsteraarhorn and the Schreckhörner, and of the Grimsel Hospice and lake in the valley below. The zig-zag road down to the lake has been cut through masses of granite in places, and considerable stretches are on the bare rock smoothed by the action of enormous glaciers.

The Grimsel Hospice and lake are situated in a very bleak and wild spot. The enormous masses of naked rocks lying about in all directions, the high encircling snow-capped mountains and the scanty vegetation, little more than stunted grass and moss, make it a gloomy and lonely spot. Like the one on the St. Gotthard, the hospice used to be kept by a number of monks as a house of rest and refreshment for the few travellers who crossed the Grimsel by the old cross roads and bridle paths, but it has now been converted into an inn.

The river Aar, little more than a brook here, rises from the Aar Glacier, a short distance from the hospice, and flows through a narrow channel on the left, as we made our way round the nollen and passed the Spitalbogen and the Spitallammi. The valley at first is very narrow and wild looking with steep bare mountains on each side. In some places the road is protected from avalanches by galleries, and at various points the scenes are very fascinating in their wildness.

Handeck was soon reached, and a short rest for refreshments was made at the hotel, which replaces the one destroyed by an avalanche in 1889. It is situated in a delightful spot, at a short distance from the Handeck Cascade. This is considered one of the most imposing waterfalls in the Alps, and is formed by the river Aar precipitating itself some 200 feet into a narrow, gloomy chasm, surrounded by wild and dangerous rocks. Just before it leaps over the ledge it is joined by another wild rushing stream, the Arlenbach, coming down from the opposite side of the ravine. The roar of the water can be heard for some distance, and, although the spray prevented me from getting a good snap-shot of the fall, it added to the beauty of the scene by

the gorgeous rainbow colours formed in the sunlight. At this point the road passes through a tunnel cut through the massive overhanging rocks, and then winds between precipitous rocks, the steep sides of which are in many parts covered with masses of stones—the work of avalanches and water torrents. The road between Handeck and Meiringen is noted for its grand wild scenery, especially the part through the Zuben gallery, which is considered the most imposing and the finest portion of the route.

The entrance to the Aar Gorge was reached a short distance from Meiringen. This famous gorge is the chief attraction of the district, and is a wonderful piece of nature's work. For more than a mile the river rushes through this narrow chasm—in places not more than a yard wide, and narrower still at the top, hundreds of feet above the gallery, which conducts visitors through the gorge. At one point lateral gorges are seen on each side. These show great rounded holes which have been scooped out of the rocks by the rushing and swirling water and ice of former ages. To the right a gallery leads over the gorge at a great height above the water, and from this point the gorge is seen in all its marvellous attraction. The Reichenbach Fall is near and reminds one of Conan Doyle's adventures of Sherlock Holmes. For it was here the great struggle took place when he and Moriarty fell into the abyss at the foot of the Fall.

On leaving the gorge we were met by the conveyances and in a few minutes reached Meiringen, a delightful Alpine village situated among charming scenes of snow-clad mountains, and luxuriant woods. At this point various routes converge; and the people are engaged in wood carving, some of the shops exhibiting very fine work. Meiringen was almost destroyed by fire in 1891, and in rebuilding many of the wooden houses have been replaced by stone buildings. The Alpbach Falls make a fine picture in the daytime and are illuminated at night. While at Meiringen M. Reverdin gave an address on the Mountain Railways.

The village of Brienz was reached early on Wednesday morning. It stands at the head of the Brienz Lake, and is noted for its wood carving. The village itself is not very important, but the lake, which is 9 miles long and 2 miles wide, is noted for its marvellous mountain scenery. Here we boarded a steamer and crossed the lake to the Giessbach Waterfall. This magnificent waterfall rises in the Schwarzhorn and drops 1000 feet into the lake in seven cascades, forming a beautiful picture among the thick foliage. The climb up to the hotel was through a pine grove and took 20 minutes—a cable car makes the ascent in a few minutes. From various points the views of the falls, the surrounding mountains, and of the lake were most picturesque.

From the Giessbach the sail down the lake to Interlaken occupied an hour and opened up new scenes. Interlaken stands on a small plain between Lake Brienz and Lake Thun—the two lakes, about two miles apart, and probably forming one sheet of water in the past, being

connected by the river Aar. The town is one of the most fashionable resorts in Switzerland and is a good centre for a charming variety of excursions, as the district abounds in attractions, with its mountains and glaciers, lakes and waterfalls and peaceful valleys. The Höhweg is the favourite promenade, with its fine avenue of beautiful walnut trees, and grand views of the Jungfrau. Most of the houses are of wood, and are built in true Swiss style with overhanging eaves and galleries, and many of them are handsomely decorated with carvings and inscriptions, work for which the district is noted.

In the afternoon an ascent of the Harder was made by means of the new Cable Railway. The height is about a mile, and the ascent is made on a gradient of 58:100—a fearful journey for the nervous on what appears an almost perpendicular cliff. From the terrace in front of the restaurant a lovely view was obtained of the Bernese Alps, Interlaken, Lake Thun and the charming valley.

From Interlaken we took the steamer for Spiez on Lake Thun. This lake is $10\frac{1}{2}$ miles long and two miles wide, and on each side there are small villages, and dotted here and there rustic villas, chalets and gardens. The village of Spiez is situated at the foot of the Niesen 7765 feet high, and the castle occupies a picturesque position on a tongue of land projecting into the lake. Several attractive excursions over mountains and on the lake can be made from this point.

On Thursday morning we left Spiez by train, and for about five hours passed through some delightful scenes as we travelled to Montreaux. There was a grand succession of lofty mountains, deep gorges, valleys and waterfalls. In some parts the train moved slowly up steep inclines and at others dropped down into deep valleys, and at almost every bend in the route a fascinating scene was exposed—the views over Montreaux and Lake Geneva were extremely beautiful. Lunch was served at the Montreaux Palace and here many partings took place, after a magnificent excursion, in which all the arrangements had been carried out with the greatest of success—due to the untiring efforts of the able leaders of the party.

ANNUAL MEETING OF THE SOCIETY, 1909.

The Twenty-fourth Annual Meeting of the Society was held in the Lord Mayor's Parlour, Town Hall, Manchester, on Thursday, May 6th, 1909, at 2.30 p.m.

His Worship the Mayor of Salford presided. Letters of apology were read from The Rt. Hon. the Lord Mayor, Messrs. Harry Nuttall, M.P., F.R.G.S., F. Zimmern, F.R.G.S., and D. A. Little, The Vice Chancellor of Victoria University, the Rev. Canon Symonds and Mr. J. G. Groves, J.P., D.L.

The following were present: Mrs. Harry Sowerbutts, Alderman Sir Bosdin Leech, J.P., Councillors T. Hassall, J.P., and A. Hailwood, J.P., Messrs. W. S. Ascoli, F.R.G.S., J. E. Balmer, F.R.G.S., C. A. Clarke, G. Ginger, N. Kolp, George Pearson, R. C. Phillips, J. Howard Reed, F.R.G.S., H. Sowerbutts, T. W. Sowerbutts, Joel Wainwright, J.P., A. Balmforth, G. Barber, Isaac Chorlton, E. Roose Evans, A. Goodwin, C. J. Gladstone, W. Harper, W. Jackson, A. Pickford, C. Roeder, J. Robertshaw, A. V. Sharratt, H. Thorp and others.

The Minutes of the Twenty-third Annual Meeting held on June 18th, 1908, which appeared in Part II of Vol. xxiv of the JOURNAL, page 78, were taken as read.

The Hon. Secretary read the following Report of the Council, and Mr. T. W. Sowerbutts, in the absence of the Hon. Treasurer, mentioned and explained the chief items in the Accounts, which follow the Report.

REPORT OF THE COUNCIL OF THE MANCHESTER
GEOGRAPHICAL SOCIETY FOR THE YEAR ENDING
DECEMBER 31st, 1908.

In presenting the Annual Report of the twenty-fourth year's working of this Society, the Council are pleased to be able to state that the operations of the Society have been again carried on with success.

Meetings have been held during the Winter Session, and the addresses delivered have been of a varied and excellent character; the list of subjects given below will give some idea of the store of information placed at the disposal of the members.

The Council are again much pleased and encouraged by the large attendance (an average of over 200) at the Meetings,

which, it is thought, shows clearly that the members approve of the arrangements made. Lecturers have frequently expressed their gratification of the crowded gatherings they have been able to address.

In consequence of the often over-crowded state of the hall, the Council have approached the Directors of the Manchester Geographical Society Building Co., Ltd., with the object of securing increased accommodation, and hope to report progress in this matter in the near future.

On June 19th the Council, with the assistance of some of the members, had the pleasure of entertaining about 20 members of the Commercial Geographical Society of Paris. A full account of the day's proceedings will be found in the *JOURNAL* (Vol. xxiv, page 91). Our thanks are due to all who contributed to the satisfactory result attained.

The thanks of the Council are due to the Victoria University of Manchester, for permitting the Society to hold the meeting of November 3rd in the Chemical Lecture Theatre, which gave opportunity for a larger number of members and friends than our own hall will hold to hear Lieut. Boyd Alexander's account of his "Journey across Africa."

The addresses delivered cover a wide area of the World, and have been in most cases well illustrated with admirable lantern slides. The subjects dealt with, are as follows:—

EUROPE.

"The Geographical Botany of Great Britain." Mr. C. E. Moss, D.Sc., F.R.G.S.

"A Cycling Tour through Oxfordshire." Mr. J. T. Lightwood.

"Dublin and the British Association." Mr. J. Howard Reed, F.R.G.S.

"A Ramble in Holland." Mr. M. W. Thompstone.

"Life in Paris." Dr. A. C. Magian, B.Ch., F.R.G.S.

"St. Luc and the Val d'Anniviers." Mr. T. Arthur Leonard.

"The Jungfrau Railway." Mr. F. Oederlin.

"From the Alps to the Riviera." Mr. A. W. Rumney, M.A.

"Hungary and the Hungarians." Mr. W. H. Shrubsole, F.G.S.

"In and About the Carpathians." Mr. W. H. Shrubsole, F.G.S.

"In the Land of the Black Mountain; Montenegro as I saw it." Rev. T. T. Norgate, F.R.G.S.

"The Historical Geography of the Danube." Mr. E. W. Dann, B.A., F.R.G.S.

ASIA.

"Travels in Turkey in Asia." Mr. Mark Sykes, F.R.G.S.

"Snapshots in Palestine and Egypt." Mr. C. H. Bellamy, F.R.G.S.

"Persia." Rev. Napier Malcolm, M.A.

"A Journey in India." Mr. J. Howard Hall.

"To India's Coral Strand." Dr. A. C. Magian, B.Ch., F.R.G.S.

AFRICA.

"The Unknown Heart of Central Africa." Right Hon. Viscount Mountmorres.

"From the Niger, by Lake Tchad, to the Nile." Lieut. Boyd Alexander, F.R.G.S.

"British South Africa." Mr. J. Howard Reed, F.R.G.S.

AMERICA.

"Canada's Capabilities." Mr. W. Beecher Smith.

"Across Canada." (Address to Children.) Mr. J. Howard Reed, F.R.G.S.

"Mexico and its Volcanoes." Mr. Bernard Hobson, M.Sc.

"The Volcanoes of Central America." Dr. Tempest Anderson, F.G.S., F.R.G.S.

"Guatemala; Travels and Experiences." Mr. W. S. Ascoli, F.R.G.S.

"Travelling in Brazil." Mr. T. H. Christy.

AUSTRALASIA.

"Australian Water Supply and Resources." Mrs. Louise Hirsch.

"The Birth of a Volcano (Samoa)." Rev. George Furlong.

Five Excursions were carried out during the Summer. In connection with these the cordial thanks of the Council are due to Messrs. R. Hamnett, J. Howard Hall, and J. Stephenson Reid, the Brother Superior of Buckley Hall, and the Governor of Chetham's Hospital, for their able and pleasant leadership.

The JOURNAL for the last half of 1907, and for the first quarter of 1908 has been issued during the year.

The Expenditure has somewhat exceeded the amount usually set apart for this purpose, and so any further issue was not possible during the year 1908.

Valuable additions to the Library, Map Room, and Museum, have been made during the year, consisting mainly of Exchanges for the JOURNAL of the Society.

The Victorians have again performed useful service, chiefly by lecturing on behalf of the affiliated Societies and of other members, and also by arranging for Social Gatherings to bring the members together, and to help the finances of the Society. The members are indebted to the Victorians for their valuable services as stewards on the occasion of Lieut. Boyd Alexander's Lecture at the University.

During the year the Rev. S. A. Steinthal, F.R.G.S., for 19 years Chairman of the Council, found it necessary, owing to advancing years, to relinquish that position. The Council had no alternative but to accept reluctantly the resignation. They desire to take this opportunity to place on record their high appreciation of Mr. Steinthal's services and personal worth. All who have any experience of the past Chairman's devoted and unsparing work for the Society will realise the loss we suffer by his withdrawal from active service, and those who have been in close touch with him, and have had the privilege of working under his wise direction and guidance are conscious of the loss of a personal inspiration and stimulus which it is difficult to replace.

The Council are gratified to be able to inform the members that Mr. Harry Nuttall, M.P., F.R.G.S., for many years Vice-Chairman of the Council, has consented to undertake the duties of Chairman. The members are to be congratulated on this appointment as the devotion of Mr. Nuttall to the best interests of the Society is well known. The members are indebted to him primarily for the present satisfactory accommodation which which they possess.

The office of Vice-Chairman rendered vacant by the above appointment, was accepted by Mr. F. Zimmern, who from the first has acted as an Hon. Secretary to the Society. It is hoped he may be long spared to continue his useful and devoted work for the Society.

The Council desire again to acknowledge their indebtedness to the member who undertakes to defray the expense of the

Special prize awarded on the result of the examinations in Geography at the Victoria University.

The Balance Sheet for the year, with the Report of the Hon. Auditor, is presented herewith.

The Council propose in future, to invest the Life Membership Fees in Building Company Shares, and to use the income thus derived as ordinary revenue. As will be seen from the Accounts there is a deficit of £21. 11s. 7d. on the year's working.

The Council have, during the year, made an appeal to the Shareholders of the Building Co., to arrange that so far as possible their shares in the Company shall become the property of the Society at their decease.

The sincere thanks of the Society are due to Mr. N. Kolp, Rev. S. A. Steinthal, and Mr. S. L. Helm, for their generosity in presenting their shares to the Society, which has resulted in improving the financial position to a very gratifying extent.

It is with sincere regret that the Council have again to call attention to a serious loss of members by death. Among those whose loss we deplore may be mentioned:—

The Rt. Hon. the Earl of Derby.	Mr. R. H. Joynson, J.P.
The Rt. Hon. the Duke of Devonshire.	Mr. F. H. Kolligs.
Mr. J. Calder.	Sir Joseph Leigh, J.P.
Mr. Jacob Earnshaw, J.P.	Mr. F. Mehl.
Mr. G. H. Gaddum, J.P.	Mrs. Rylands.
Mr. Edward Goetz.	Mr. John Snaddon.
Major General Sir F. J. Goldsmid.	Mr. J. Harvey Simpson.
Sir James Hoy, J.P.	Mr. W. Wilson, J.P.

In conclusion, the Council assure the members that the best interests of the Society are ever before them. Thanks are due to the general body of members for their support during the year under review, and the Council trust that the work done will meet with their approval. The Council feel that if all the members will individually interest themselves to extend the scope and usefulness of the Society, by persuading their friends to join, they will give the responsible officials the most substantial support possible, and will be playing no small part in extending the usefulness of the Society. They will at the same time establish it more and more firmly upon the basis it has secured, strengthen its hold upon the cultured people of the City and District, and assist the progress of Geographical Science.

REVENUE ACCOUNT.

YEAR ENDING DECEMBER 31st, 1908.

Dr.		Cr.	
1907		1907	
£	s. d.	£	s. d.
102	13 4		
94	18 5	To Expenses of Meetings	94 18 9
146	6 8	Journal, less Advertisements	113 5 4
85	10 0	Rent, Electricity, Water, and Insurance...	130 8 10
106	6 5	Salaries	85 10 0
		Books, Maps, Binding and Library	7 8 8
		Sundry Expenses, Stationery, Postages, Telegrams, Carriage, Wages, Coal, &c.	110 0 1
14	3 7	Commission and Expenses, New Members, and Collection of Subscriptions	9 7 0
—		Repairs to Furniture	3 13 5
0	16 2	Education Committee's Expenses	—
555	2 9		£554 12 1
			£555 2 9
		By Members' Subscriptions :—	
		Life	31 10 0
		(Transferred to Reserved Account)	
		Ordinary	435 8 0
		Associate	45 13 6
		Societies	12 12 0
		Bank Interest	0 11 4
		Victorians (Surplus from Whist Drives) ...	4 0 0
		Balance Deficit on Year 1908	18 17 11
			£554 12 1

FUND FOR FURNISHING NEW PREMISES AND LIQUIDATION OF DEBT.

1905 to 1908.

Dr.		Ch.	
£ s. d.		£ s. d.	
To Amount Expended on Furniture, Fittings, &c., to December 31st, 1905	148 6 2	By Donations, 1905 to 1907	386 7 6
Do. do. 1906	17 15 0	Do. Donations, 1908 (Mr. George Pearson)	0 10 6
Do. do. 1907	5 13 1	Do. Bank Interest	2 5 5
Do. do. 1908	5 19 5		
	177 13 8		
Amount Transferred to General Account towards Deficiency, 1905	98 4 8		
Do. do. 1906	84 8 2		
Do. do. 1907	28 16 11		
	211 9 9		
	£389 3 5		£389 3 5

BALANCE SHEET, DECEMBER 31st, 1908.

LIABILITIES.

To Subscriptions paid in advance.....	£	s.	d.
„ Amounts owing to Sundry Creditors.....	37	5	6
„ Life Membership :—	194	18	8
Suspense Account.....	£12	16	6
Subscriptions in Reserve	31	10	0
	44	6	6

ASSETS.

By 31 Shares (£10 each, fully paid) in the M.G.S. Building Co. Ltd., as under :—	£	s.	d.
16 Shares purchased for	60	0	0
15 Shares presented	150	0	0
„ Subscriptions in arrear	210	0	0
„ Cash at Bank	12	13	3
„ Cash in hand	0	7	8
„ Balance deficit from 1907.....	162	9	8
„ Add loss on year 1908	21	11	7
	184	1	3
Less Shares presented to the Society :—			
Mr. N. Kolp	10		
Rev. S. A. Steinthal	3		
Mr. S. L. Helm	2		
	150	0	0
	34	1	3
	£276	10	8

NOTE.—The Furniture, Fittings, Books, Maps, &c., in the Library, Stock of *Journals*, Lanterns, and Slides (which are insured for £1,000) are not taken into account as Assets in the above Statement. There are 39 Life Members, and the subscriptions of 36 have been taken as Revenue in years prior to 1908.

Audited and found correct,

THEODORE GREGORY (F.C.A.)

Honorary Auditor.

In moving the adoption of the Report and Balance Sheet, the Mayor of Salford warmly commended the suggestion of the Council to the Members to bring the Society before their friends, as it was well worthy of more support. He considered that the Society had attained a very satisfactory position. He also suggested that other shareholders in the Building Co. might follow the good example set by those referred to in the Report. He remarked humorously that in view of the Budget proposals the present time was a favourable one to let the Society have these shares rather than allow the Government to take a portion of them.

Mr. J. Howard Reed, F.R.G.S., in seconding the resolution, emphasized the remarks of the Mayor in regard to the improvement in the position of the Society. He drew attention to the mention in the Report of the retirement of the Rev. S. A. Steinthal, F.R.G.S., from the Chairmanship of the Council, which they all regretted, and to the arrangements consequent thereon. Mr. Reed also announced that the Directors of the Building Co. had agreed to the suggestions of the Council, and had arranged before the next session to increase the seating accommodation of the Lecture Hall and to improve the ventilation.

The Resolution that the Annual Report and Balance Sheet be adopted was passed unanimously.

Mr. Joel Wainwright, J.P., in moving that the best thanks of the Meeting be given to the Officers and Council for their services during the year, said that the Society was undoubtedly one of the best educational institutes existing for Geographical Science. He knew no Society whose meetings were so useful, so instructive and so entertaining, and only regretted that he was unable to attend frequently.

Mr. A. Balmforth, as a constant attender at the Meetings, seconded the resolution and fully endorsed all that Mr. Wainwright had said and especially mentioned Mr. Little, the Hon. Treasurer, to whom was due much of the credit for the satisfactory financial position of the Society. The resolution thus moved and seconded, was carried unanimously.

The Secretary read the Nominations for Officers and Council, as follows: The present Officers and Council as per printed list, with the following alterations and additions—Vice Presidents: Colonel H. T. Crook, J.P., Major E. W. Greg, J.P., F.R.G.S., Messrs. N. Kolp, J. McFarlane, M.A., M.Com., and W. Joynson Hicks, M.P.; Council: Messrs. W. S. Ascoli, F.R.G.S., and C. A. Clarke, and Dr. Alfred Rée.

Mr. A. Pickford moved, Mr. A. V. Sharratt seconded, and it was resolved that the Officers and Council as nominated be elected.

LIST OF OFFICERS AND COUNCIL as elected.

President.

His Royal Highness the PRINCE OF WALES, K.G.

Vice-Presidents.

The Right Rev. the BISHOP OF SALFORD.	Colonel H. T. CROOK, J.P., V.D.
The Right Rev. BISHOP WELLDON, Dean of Manchester.	Mr. W. J. CROSSLEY, M.P.
The Right Hon. the LORD MAYOR OF MANCHESTER.	Professor W. BOYD DAWKINS, J.P., F.R.S.
His Worship the MAYOR OF OLDHAM.	Major E. W. GREG, J.P., C.C., F.R.G.S.
His Worship the MAYOR OF SALFORD.	Mr. J. G. GROVES, D.L., J.P.
The VICE-CHANCELLOR OF VICTORIA UNI- VERSITY.	Mr. W. JOYNSON-HICKS, M.P., F.R.G.S.
Sir W. H. HOLLAND, Bart., M.P.	Mr. J. S. HIGHAM, M.P.
Sir W. H. HOULDSWORTH, Bart.	Mr. N. KOLP.
Sir C. E. SCHWANN, Bart., M.P.	Mr. JOHN MCFARLANE, M.A., M.Com.
Sir HUMPHREY F. DE TRAFFORD, Bart.	Mr. E. W. MELLOR, J.P., F.R.G.S.
Sir FRANK FORBES ADAM, C.I.E.	Mr. HARRY NUTTALL, M.P., F.R.G.S., <i>Chairman of the Council.</i>
Alderman Sir JAMES DUCKWORTH, M.P., F.R.G.S.	Mr. S. OPPENHEIM, J.P.
Alderman Sir BOSDIN T. LEECH, J.P.	Mr. J. HOWARD REED, F.R.G.S.
Sir WILLIAM MATHER, J.P.	Mr. C. P. SCOTT, J.P.
Mr. FREDERICK BURTON, J.P.	Rev. S. A. STEINTHAL, F.R.G.S.
Mr. J. F. CHEETHAM, M.P.	Mr. HERMANN WOOLLEY, F.R.G.S.
Professor T. H. CORE, M.A.	Mr. F. ZIMMERN, F.R.G.S., <i>Vice-Chair- man of the Council.</i>

Trustees.

Mr. H. NUTTALL, M.P., F.R.G.S.	Mr. SIDNEY L. KEYMER, F.R.G.S.
Mr. E. W. MELLOR, J.P., F.R.G.S.	

Honorary Treasurer.

Mr. DAVID A. LITTLE.

Honorary Secretary.

Mr. J. HOWARD REED, F.R.G.S.

Honorary Secretary (Victorians).

Mr. C. A. CLARKE.

Council.

Mr. W. S. ASCOLI, F.R.G.S.	Mr. T. C. MIDDLETON, J.P.
Mr. J. E. BALMER, F.R.G.S.	Mr. F. S. OPPENHEIM, M.A.
Mr. JAS. BARNINGHAM.	Mr. GEORGE PEARSON.
Mr. C. A. CLARKE.	Mr. R. C. PHILLIPS.
Mr. C. COLLMANN.	Mr. ALFRED REE, Ph.D.
Mr. GEORGE GINGER.	Mr. J. STEPHENSON REID.
Mr. J. HOWARD HALL.	Mr. T. W. SOWERBUTTS, A.S.A.A.
Mr. Councillor T. HASSALL, J.P.	Mr. EGBERT STEINTHAL.
Mr. HORACE C. MARTIN, F.R.G.S.	Mr. GEORGE THOMAS.

Honorary Auditor.

Mr. THEODORE GREGORY, F.C.A., J.P.

Mr. T. W. Sowerbutts, in moving the following resolution, drew attention to the fact that this would be the twenty-fifth consecutive time that Mr. Gregory had consented to act as Hon. Auditor:—

“That the best thanks of the Society be given to Mr. Theodore Gregory, F.C.A., J.P., for his services as Hon. Auditor, and that he be re-elected.”

Mr. George Ginger, in seconding this resolution, which was passed with acclamation, said that the Members were greatly indebted to Mr. Gregory for such a long period of Honorary and valuable service for the Society.

It was moved by Mr. J. E. Balmer, F.R.G.S., seconded by Councillor Thomas Hassall, J.P., supported by Alderman Sir Bosdin Leech, J.P. (who also remarked that the Society was opening the eyes of the people to what was going on abroad. Its work was a great one and deserved every encouragement from the public of Manchester), and resolved unanimously:

“That the best thanks of this Meeting be tendered to the Rt. Hon. the Lord Mayor for the use of his parlour, and to His Worship the Mayor of Salford for his kindness in presiding.”

After the Chairman had made a suitable response the Meeting concluded.

Proceedings of the Society.

April 1st to June 30th, 1909.

The 825th Meeting of the Society was held on Tuesday, April 6th, 1909, at 7-30 p.m.

In the Chair Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on March 30th were approved.

The Election of Miss L. Edna Walter, B.Sc., H.M.I., as an Ordinary Member was announced.

Miss L. Edna Walter, B.Sc., H.M.I., gave an address on “Alpine Glaciers and their Work.” The address was illustrated with Lantern Slides prepared from Miss Walter’s photographs.

Mr. H. Ward, H.M.I., moved and Mr. J. Howard Reed, F.R.G.S., seconded a cordial vote of thanks to Miss Walter for the interesting and instructive address, illustrated in such an appropriate manner with her excellent photographs. The resolution was passed unanimously and in responding Miss Walter expressed her gratitude to Mr. Howard Farmer for his help in photography and to Messrs. A. and C. Black for publishing some of her photographs in a form suitable for the use of schools.

The 826th Meeting of the Society was held on Tuesday, April 20th, 1909, at 7-30 p.m.

In the Chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on April 6th were taken as read.

The Election of the following Members was announced— Ordinary: Messrs. Henry Crabtree and D. W. Hutton; Corresponding: M. Paul Labbé, of Paris; Honorary: Mrs. Eli Sowerbutts.

The Right Rev. Bishop Welldon, D.D., Dean of Manchester, gave a Lecture entitled, "Some Thoughts suggested by Travels over the Empire."

Lantern Views of many of the Ports and Coaling Stations which the Dean had visited were exhibited.

Mr. Forsyth moved, Mr. J. Howard Reed, F.R.G.S., seconded and Mr. W. A. Arnold supported a cordial vote of thanks to the Dean for his interesting and instructive address. The Resolution was carried unanimously, with acclamation.

The 827th Meeting of the Society was held at Norecliffe Hall, Sialk, on Saturday, May 22nd, 1909.

In response to the kind invitation of Major E. W. Greg, J.P., C.C., F.R.G.S., to visit the grounds of Norecliffe Hall, a considerable number of Members availed themselves of the opportunity to visit this delightful district.

After being graciously welcomed by Major and Mrs. Greg on the Terrace, the Members were taken through the beautiful grounds of Norecliffe Hall and Quarry Bank, inspecting the Old Mill, which is of special interest as having been constantly at work since its erection in 1781 by the late Samuel Greg.

While resting at the Mill, the members were interested in meeting the father of the leader who expressed his pleasure at the Meeting, and his thanks for the welcome, which Mr. Joel Wainwright, J.P., in an appropriate speech, gave to him on behalf of the Members present.

Before leaving the Hall, Mr. Wainwright moved and Mr. Reed seconded a cordial vote of thanks to Major and Mrs. Greg for their kindness in receiving the Members.

Major Greg, in acknowledging the vote, expressed his thanks to the Society for his election as a Vice-President, and promised to help the Society in its work as far as he was able.

After tea at the Old Ship Inn, a further resolution of thanks was moved by Mr. J. E. Bahner, F.R.G.S., seconded by Councillor S. W. Royse, J.P., and carried unanimously with acclamation.



[By permission of the "Manchester Guardian."
 SIR E. H. SHACKLETON, C.V.O., AND THE OFFICERS OF THE
 SOCIETY.

At the Free Trade Hall, November 5th, 1909.

Top: Mr. D. A. Little, Mr. F. Zimmern, F.R.G.S., Mr. J. Howard
 Reed, F.R.G.S., The Vice-Chancellor of the University,
 Mr. Harry Sowerbutts, A.R.C.S.

Bottom: Rt. Rev. Bishop Welldon, Dean of Manchester, Sir Ernest H.
 Shackleton, C.V.O., Mr. Harry Nuttall, M.P., F.R.G.S.,
 Rt. Rev. the Bishop of Salford.

The Journal

OF THE

Manchester Geographical Society.



THE BRITISH ANTARCTIC EXPEDITION, 1907-1909.*

By E. H. SHACKLETON, C.V.O., F.R.G.S.

(Lecture, entitled "Nearest the South Pole," addressed to the Society in the Free Trade Hall, on Friday, November 5th, 1909.)

THE British Antarctic Expedition, 1907-9, left Port Lyttelton, New Zealand, on January 1st, 1908, for the south. In this article I will not attempt to deal in detail with the preliminary arrangements and with the equipment. The amount of money at my disposal had been limited, and economies had been necessary in various directions; but I had been able to get together a small body of well-qualified men, and we were fully equipped as far as food, clothing, sledges, etc., were concerned. We had a motor car, ponies, and dogs for haulage purposes. The generosity of the Admiralty in lending the expedition a number of instruments enabled me to make the scientific equipment fairly complete. The "Nimrod," in which the journey to the winter quarters on the Antarctic continent had to be undertaken, was certainly small for the work, and left Lyttelton with scarcely 3 feet of freeboard, a somewhat serious matter in view of the fact that very heavy weather had to be faced. On the other hand, the ship was very sturdy, well suited to endure rough treatment in the ice.

* Reprinted, with the illustrations, from the "Geographical Journal" by the kind permission of Sir Ernest H. Shackleton and of the Royal Geographical Society.

Vol. XXV. Parts III-IV, 1909.

The shore party consisted of fifteen men, my companions being as follows:—

Lieut. J. B. Adams, R.N.R., meteorologist.

Bertram Armytage, in charge of the ponies.

Sir Philip Brocklehurst, assistant geologist.

Prof. T. W. Edgeworth David, F.R.S., geologist.

Bernard Day, electrician and motor expert.

Ernest Joyce, in charge of general stores, dogs, sledges,
and zoological collections.

Dr. A. F. Mackay, surgeon.

Dr. Eric Marshall, surgeon and cartographer.

G. E. Marston, artist.

Douglas Mawson, mineralogist and petrologist.

James Murray, biologist.

Raymond Priestley, geologist.

William Roberts, cook.

Frank Wild, in charge of provisions.

Prof. David, of Sydney University, joined the expedition at the last moment, and the services of such an experienced scientific man were invaluable. Douglas Mawson was lecturer in mineralogy and petrology at the Adelaide University. James Murray had been biologist on the Scottish Lake Survey, and had made a special study of microscopic zoology, a circumstance that led to most important discoveries in the frozen lakes of Ross Island. Joyce and Wild, like myself, had served on the National Antarctic Expedition.

My original intention was to winter on King Edward VII Land, a part of the Antarctic continent at present quite unknown. The "Nimrod" was towed to the Antarctic circle, a distance of 1500 miles, in order that her small supply of coal might be conserved, and we were soon in the belt of ice that guards the approach to the Ross Sea. The navigation of the ice was not more than usually difficult and on January 16th we entered the Ross Sea in 178° 58'E. long. Keeping a south-westerly course, we sighted the Great Ice Barrier on January 23rd, and proceeded to skirt the ice-edge in an easterly direction towards Barrier Inlet (Balloon Bight), the spot selected by me

as the site for the winter quarters. I knew that the inlet was practically the beginning of King Edward VII Land, and that it would be an easy matter for the ship, in the following summer, to reach us there, whereas the land sighted by the "Discovery" Expedition might be unattainable if the season were adverse. In 165 E. long, near the point where Borchgrevink landed in 1900, we sighted, beyond 6 or 7 miles of flat ice, steep-rounded cliffs, having the appearance of ice-covered land. We could not stop to investigate.

The plan proved impracticable, for we found that Barrier Inlet had disappeared. Many miles of the Barrier Edge had calved away, and instead of the narrow bight there was a wide bay joining up with Borchgrevink's inlet, and forming a depression that we called the Bay of Whales. We accordingly made an attempt to reach King Edward VII. Land, but here again we were unsuccessful. The way was barred by heavy consolidated pack, into which bergs were frozen, and this ice stretched far to the north. The season was advancing; the "Nimrod" was leaking as a result of severe gales on the journey south, and I decided that we had better proceed direct to McMurdo Sound, and establish the winter quarters there. The "Nimrod" entered the sound on January 29th, and was brought up by fast ice 20 miles from Hut Point, the spot at which the "Discovery" Expedition wintered in 1902 and 1903. The ice showed no signs of breaking out, and on February 3rd we proceeded to land stores, and erect a hut on Cape Royds, the spot selected, under pressure of circumstances, for the winter quarters of the expedition. On Feb. 22nd the "Nimrod" went north again, leaving the shore-party at Cape Royds. The ship was to return in the following summer.

The first work of importance undertaken after the winter quarters had been established was the ascent of Mount Erebus. This active volcano which has an altitude of over 13,000 feet, was of particular interest from the geological and meteorological standpoint, and though the ascent was likely to prove difficult, it seemed that the attempt should be made. A party set out from winter quarters on March 5th, and on the morning of March 10th reached the edge of the active crater. The scientific

results of the journey were both interesting and important. The party found that the height of the active crater is 13,350 feet above the sea-level, the figures being calculated from aneroid levels and hypsometer readings, in conjunction with simultaneous readings of the barometer at the winter quarters. It was noted that the moraines left at the period of greater glaciation ascend the western slopes of Mount Erebus to a height of fully 1,000 feet above the sea-level. As the adjacent portion of Mc. Murdo Sound is at least 1,800 feet deep, the ice-sheet at its maximum development must have had a thickness of not less than 2,800 feet. Two distinctive features of the geological structure of Mount Erebus were the ice-fumaroles, and the vast quantities of large and perfect felspar crystals. Unique ice-mounds have been formed in the cup of the second crater, from which rises the present active cone, by the condensation of vapour round the orifices of fumaroles. Only under conditions of extremely low temperature could such structures come into existence. The felspar crystals, found in enormous quantities mixed with snow and fragments of pumice in the second crater, were from 2 to 3 inches in length, and very many were perfect in form. The fluid lava which had surrounded them had been blown away by the force of the explosions which had ejected them from the crater. The valuable meteorological observations made cannot be stated within the scope of this article.

The most important event of the winter months was the discovery by the biologist of microscopical life in the frozen lakes of the Cape Royds district. Investigations showed that algae grew at the bottom of the lakes, which are frozen during the greater part of the year, and in some cases thaw completely only in exceptionally warm seasons. The microscope showed that rotifers, water-bears and other forms of minute animal-life existed on the weed. A shaft was sunk through 15 feet of ice to the bottom of a lake which did not thaw during the two summers that we spent at Cape Royds, and on weed found under the ice there were living rotifers of several kinds. Other rotifers were found on weed melted out of solid ice. It seemed obvious that the microscopic animals were able to live at a temperature at least as low as 40° below zero Fahr., and



Fig 1. "Keonya" towing "Nimrod."



Fig. 2. "Nimrod" off Cape Royds.



experiments verified this conclusion. The animals were not killed by that temperature, though all the natural functions were suspended, including the bearing of young among the viviparous species. They were alternately frozen and thawed weekly for a long period, and took no harm. They were dried and frozen, thawed and moistened, and still they lived. They lived in brine so salt that it froze only at a temperature of about zero Fahr., and many of them survived the test of being dried and placed in a bottle, which was then immersed in boiling water. Some of the weed carrying animals was dried and conveyed to London, being subjected to tropical temperatures on the way. It was moistened in London, and the animals were found to be still living. They survived a final test of immersion in frozen gas at a temperature of -81°C . The whole subject is one of extraordinary interest to biologists, and the scientific memoirs of the expedition will embody the results of all Murray's observations and experiments.

Early in the Spring of 1908, we began to make arrangements for the sledging journeys. One party, led by myself, was to go south towards the geographical pole; Prof. David was to take a second party north, and to attempt to attain the south magnetic pole; and a third party was to undertake geological work in the mountains west of McMurdo Sound, with the special object of discovering fossils. The motor-car had not proved a success. The petrol engine ran well, even at low minus temperatures, and on the sea-ice the car could travel fast and far, but soft snow, such as was encountered on the Barrier surface, formed an effective bar to its progress. We had left New Zealand with ten ponies, imported from the sub-Arctic regions of Northern Manchuria, and landed eight of the animals at Cape Royds in fairly good condition. Unfortunately, four were lost early in the winter, so that only four were left available for sledging work. Experiments showed that they could haul easily 650 lbs. each, this including the weight of the sledge (60 lbs.), and that they travelled well on bad surfaces, thus realizing the hopes I had based on reports of their performances in their native country.

I made a preliminary journey on to the Barrier before the

return of the sun, taking with me Prof. David and Armytage, in order to get an idea of the surface to be encountered. We experienced very low temperature, below -57° Fahr., and we only stayed for a few days. By means of a series of sledging journeys from Cape Royds, we established a depôt of stores at Hut Point, and on September 22 a party started out to lay a depôt on the Barrier beyond Minna Bluff in readiness for the southern journey. The temperature got down to -59° Fahr., with blizzard winds, and the petroleum for the cookers was practically frozen at times, while off Minna Bluff we got amongst crevasses.

On October 6th we laid the depôt in lat. $79^{\circ} 36'S.$, long. $168^{\circ} E.$, a distance of 120 miles from the winter quarters. We reached the hut again on October 13th. In the meantime, Prof. David, Douglas Mawson, and Dr. Mackay had started on their journey to the south magnetic pole. I did not see them again until March 1st, 1909.

The southern party was to consist of Adams, Marshall, Wild, and myself. I decided to take provisions and oil for ninety-one days, the daily allowance of food as long as full rations were given to be 34 ozs. The total weight of the provisions taken was 773 lbs. 8 ozs. Each pony was to draw a 11-foot sledge. In regard to our own clothing, we made a radical reduction in weight as compared with previous expeditions. We wore Burberry windproof gaberdine over Jaeger woollen undergarments, and used furs only for the hands and feet and for the sleeping-bags. I am satisfied that we could not have travelled as far as we did in the time at our disposal had we worn the usual heavy garments. The other articles of our equipment were along the lines laid down by other Polar explorers, weight having been reduced to the minimum in each case. The scientific equipment included a 3-inch theodolite with stand, three chronometer watches, three pocket compasses, one hypsometer, eight thermometers, one case surveying instruments, two prismatic compasses, one sextant with artificial horizon, and camera with plates. The food for the ponies consisted of maize and Manjee ration, with a little Australian compressed fodder, 900 lbs. in all, the allowance for each pony being 10 lbs. per day.

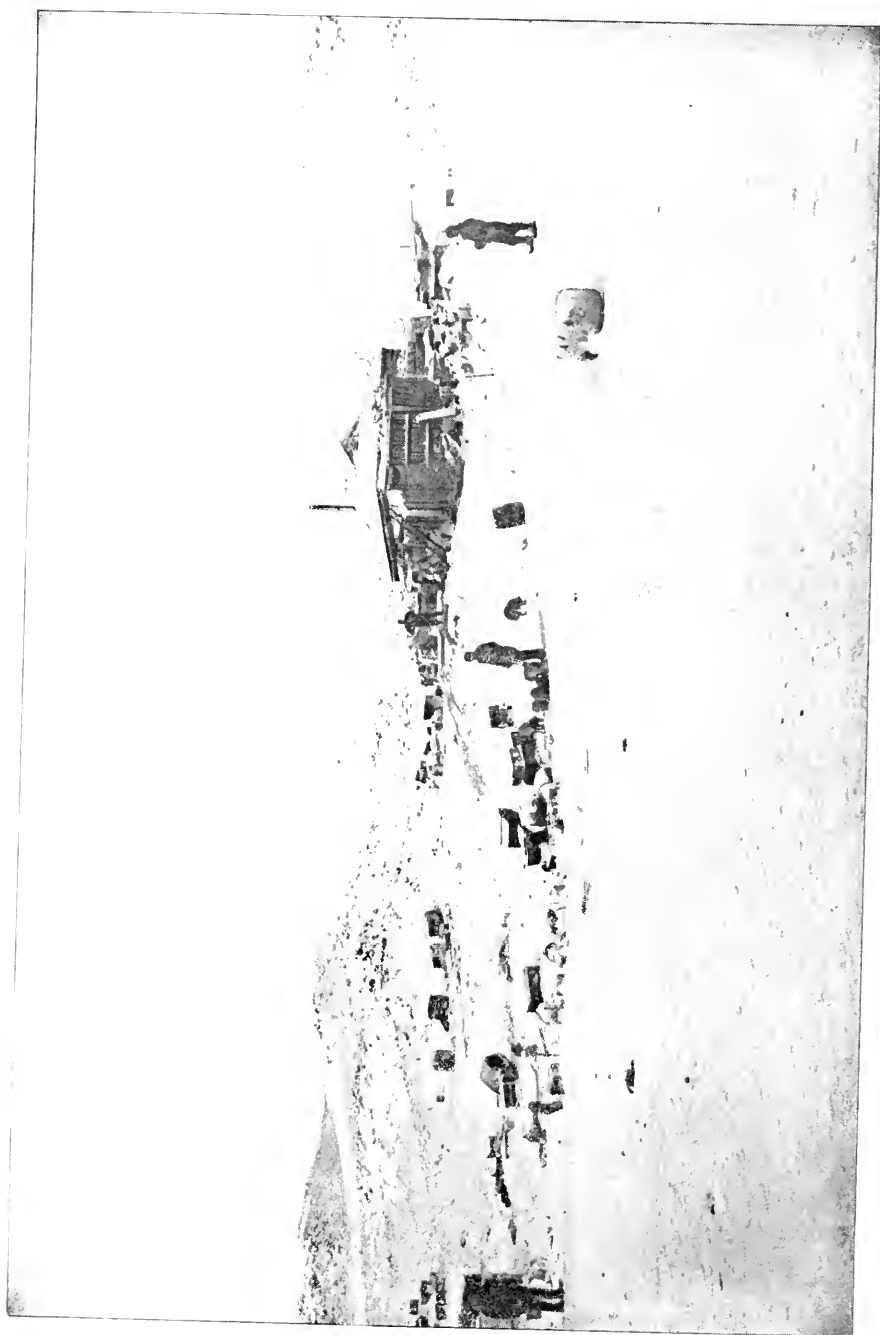


Fig. 3. Winter Quarters, Cape Royds.



The southern party left the winter quarters on October 29th, accompanied by a supporting party of six men. Progress at first was slow, heavy weather and crevassed ice being encountered: and it was not until November 15th that we reached the depôt laid out on the spring journey, the supporting party having left us some days previously. The ponies were pulling well, and I was satisfied with the change from the dogs used when I accompanied Captain Scott on his southern journey in 1902. The surface was soft, but we were able to move south at the rate of about 15 miles each day. Our course lay further from the land than the course followed by the previous expedition. Good marches were made in the days that followed, and on November 26th we camped in lat. $82^{\circ} 18\frac{1}{2}'$ S., long. 168° E., having passed the "furthest south" record. New land had come within our range of vision by this time, owing to the fact that we were far out from the base of the mountains, and I had noted with some anxiety that the coast trended south-south east, thus threatening to cross our path and obstruct the way to the pole. We could see great snow-clad mountains rising beyond Mount Longstaff, and also far inland to the north of Mount Markham. On November 26th we opened out Shackleton inlet, and looking up it sighted a great chain of mountains, while to the west of Cape Wilson appeared another chain of sharp peaks, about 10,000 feet high, stretching away to the north beyond Snow Cape, and continuing the land on which Mount A. Markham lies. The first pony had been killed on November 21st, when we were south of the 81st parallel, and we had left a depôt of pony-meat and ordinary stores, to provide for the return march. We started at once to use pony-meat as part of the daily ration, and soon found that scraps of raw, frozen meat were of assistance on the march in maintaining our strength and cooling our parched throats. A second pony was shot on November 28th, and a third on December 1st, by which time we were closing in on the land, and it had become apparent that we would have to find a way over the mountains if we were to continue the southern march. We were still sighting new land ahead, and the coast-line had a more distinct easterly trend.

We camped on December 2nd in lat. $83^{\circ} 28'S.$, long. $171^{\circ} 30'E.$, opposite a red granite mountain about 3,000 feet in height. On the following day we climbed this mountain, and from its summit saw an enormous glacier, stretching almost due south, flanked by huge mountains, and issuing on to the Barrier south of our camp. We decided at once that we had better ascend the glacier, and on the following day made our way, with two sledges and the last pony, on to its surface.

We encountered difficulties at once, for the snow-slopes by means of which we gained the glacier surface gave way to blue ice, with numberless cracks and crevasses, many of them razor-edged. Travelling on this surface in *finesko* was slow and painful work. On December 5th Marshall and Adams, who were ahead looking for a route, reported that at a point close to the granite cliffs, a bird, brown in colour, with a white line under each wing, had flown over their heads. They were sure it was not a skua gull, the only bird likely to have been attracted by the last dead pony. It was a curious incident to occur in lat. $83^{\circ} 40'S.$ We left the fourth *dépôt* close to the foot of the glacier, at the foot of a wonderful granite cliff, polished by the winds and snows of ages. On December 6th we took six hours to pass about 600 yards of severely crevassed ice, over which all our gear had to be relayed, and on the following day we lost the last pony, which fell into a crevasse disguised, like so many others, by a treacherous snow-lid. Wild was leading the pony with one sledge, while Adams, Marshall and myself went on ahead with the other sledge and pioneered a practical path. We had passed over a snow-covered crevasse without noticing it, but the greater weight of the pony broke through the lid, and the animal dropped through, probably to the depth of several hundreds of feet. Happily the swingle-tree snapped with a sudden strain, and Wild and the sledge were saved. This accident left us with two sledges and a weight of about 250 per man to haul. Our altitude at this time was about 1,700 feet above sea-level.

During the days that followed we made steady progress up the glacier, experiencing constant difficulty with the crevasses. We hauled well ahead of the sledges, so that when one of us

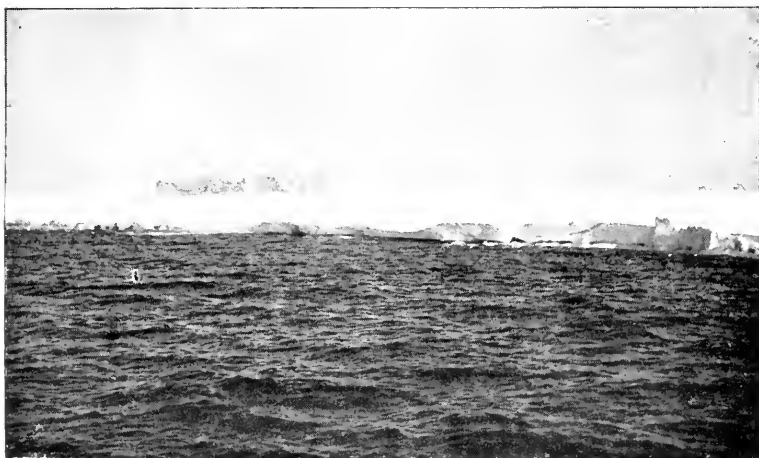


Fig. 4 Heavy Pack Ice.



Fig. 5. The Top of Mount Erebus.



dropped through a snow-lid the harness would support him until he could be hauled up again. We had many painful falls as a result of having no footgear suitable for ice-climbing, and any future travellers would do well to take boots with spikes. A special form would have to be devised, on account of the low temperature rendering impracticable the use of ordinary mountaineering boots. New land appeared day after day, and we were able to make small geological collections and to take some photographs. The rocks were sedimentary, the lines of stratification often showing clearly on the mountain-sides, and we made two geological discoveries of the first importance. In lat. 85°S. , Wild, who had climbed the slope of a mountain in order to look ahead, found coal, six seams ranging from 4 inches to 7 or 8 feet in thickness, with sandstone intervening. Close to this point I found a piece of sandstone showing an impression, and microscopic investigation has shown that this was fossil coniferous wood.

The glacier proved to be about 130 miles in length, rising to an altitude of over 9,000 feet. Christmas Day, 1908, found us in lat $85^{\circ} 55'\text{S.}$, a plateau with icefalls appearing in the south. Much glaciated land trended to the south-east, apparently ending in a high mountain shaped like a keep. The land to the west had been left behind. It was evident that we were still below the plateau-level, and, though we were getting free of the crevasses, we were hindered by much soft snow. The level was rising in a series of steep ridges about 7 miles apart. We had started to reduce rations before leaving the barrier surface, and by Christmas Day were marching on very short commons. Our temperature was 2° sub-normal, but otherwise we were well and fit.

On December 31st we camped in lat. $86^{\circ} 54'\text{S.}$ We had not yet reached the plateau-level, for slopes still lay ahead, and our altitude was about 10,000 feet. We had three weeks' food on a reduced ration, and were 186 geographical miles from the pole. The land had been left behind, and we were travelling over a white expanse of snow, still with rising slopes ahead. We were weakening from the combined effects of short food, low temperature, high altitude, and heavy work. We were

able to march on the first six days in January, and on the night of January 6th camped in lat. $88^{\circ} 7'S$. We had increased the daily ration, for it had become evident that vitality could not be maintained on the amount of food we had been taking. I had been forced to abandon the hope of reaching the pole, and we were concentrating our efforts on getting within 100 miles of the goal.

A fierce blizzard blew on January 7th and 8th, and made any march impossible. We lay in our sleeping-bags, frequently attacked by frost-bite. The wind ceased at 1 a.m. on January 9th, and at 4 a.m. we started south, leaving the camp standing, and taking only instruments, food, and the flag. At 9 a.m., after five hours' marching over a fairly hard surface, we calculated we were in lat. $88^{\circ} 23'S$., and we hoisted the flag. The snow plain stretched southward to the horizon without a break.

The homeward march was rendered difficult by shortage of food and attacks of dysentery, due to the meat from one of the ponies. We picked up a depôt left on the plateau on January 4th, and made rapid progress to the north. The blizzard winds from the south, which had hampered us on the outward journey, now proved of assistance, for we made a sail from the floorecloth of a tent, and travelled fast with our one remaining sledge. On January 19th we covered a distance of 29 miles down the glacier. On January 26th we ran out of food when 16 miles from the glacier depôt, and we marched for thirty-one hours with only a little tea and chocolate. We were able to reach the depôt in an exhausted condition. We left the glacier and reached the Barrier surface on January 28th, but Wild was attacked by dysentery, and a little later we all suffered. The trouble was evidently due to the meat from one pony, and as the frozen flesh could not have become tainted in the usual way, we assumed that it was due to the toxin of exhaustion, the animal having been killed when very weary.

We were assisted on the Northward march over the barrier by snow mounds erected on the outward journey, and we picked up the depôts without any difficulty, reaching each with our food-bags empty. We could not march at all on February 4th, owing to acute dysentery, but we were able to continue on the

following days, and on February 23rd we reached a depôt laid out off Minna Bluff in readiness for our return by a party from the winter quarters. We were all safe on board the "Nimrod" on March 4th.

The latitude observations made on the southern journey were taken with the theodolite, as were all the bearings, angles, and azimuths. Variation was ascertained by means of a compass attached to the theodolite, and the steering compasses were checked accordingly. At noon each day the prismatic compasses were placed in the true meridian, and checked against the theodolite compass and the steering compasses. The last latitude observation on the outward journey was taken in $87^{\circ} 22'S.$, and the remainder of the distance towards the south was calculated by sledge meter and dead reckoning. The accuracy of the sledge meter had been proved by the fact that the daily record of distance travelled agreed roughly with the observations for position. We took only one observation on the return journey, on January 31st, and then found that our position had been accurately recorded by the sledge meter.

The results of the southern journey may be summarized briefly. We found that a chain of great mountains stretched north by east from Mount Markham as far as the 86th parallel, and that other ranges ran towards the south-west, south, and south-east between the 84th and the 86th parallels. We ascended one of the largest glaciers in the world on to a high plateau, which in all probability is a continuation of the Victoria Land plateau. The geographical pole almost certainly lies on this plateau, at an altitude of between 10,000 and 11,000 feet above sea-level. The discovery of coal and fossil wood has a very important bearing on the question of the past geological history of the Antarctic continent.

The Northern Party consisted of Prof. David, Dr. Mackay, and Douglas Mawson. The three men left Cape Royds on October 5th, and travelled on the sea-ice along the coast as far as the Drygalski Barrier tongue. They had neither dogs nor ponies, and as they could not haul the whole of their load at one time they had to relay their two sledges thus covering the ground three times. They reached the Drygalski tongue on

November 30th, and from that point struck inland in a north-west direction, with a lightened load, towards the south magnetic pole. They crossed the Drygalski glacier with very great difficulty, a fortnight being occupied in gaining 20 miles over steep ice ridges and crevasses, and twice failed in attempts to climb on to the inland plateau first by means of the Mount Nansen glacier and then up the Bellingshausen glacier. Finally they succeeded in finding a path up a small tributary glacier to the south of Mount Larsen and gained the plateau. Then came a painful march over the plateau, which gradually rose to an altitude of over 7,000 feet, in the face of blizzards, broad undulations, and high sastrugi. On January 16th, 1909, the party reached lat. $72^{\circ} 25'S.$, long. $155^{\circ} 16'E.$, the approximate position of the magnetic pole as calculated from the observations taken by Mawson with the Lloyd-Creak dip circle. The journey back to the coast had to be made by forced marches, for the party knew that the sea-ice would have broken out and that their hope of safety depended largely on the "Nimrod," which was to cruise along the coast as far as Cape Washington early in January. They reached the Drygalski Barrier tongue on February 3rd, and on the following morning, by a happy combination of circumstances, were picked up by the ship, which was on its way back to the winter quarters, after a fruitless search along the coast. The party did very useful geographical work in the course of its journey, for Mawson triangulated the coast of Victoria Land from McMurdo Sound to the Drygalski Barrier and many new peaks, glaciers, and tongues were discovered, as well as two small islands. Prof. David studied the geological conditions with good results.

The Western party consisted of Armytage, Priestley, and Brocklehurst, and it first proceeded up the Ferrar glacier as far as the Solitary rocks, with the special object of searching for fossils in the Beacon sandstone formations. Priestley made a thorough geological search of the neighbourhood, but without success, so far as fossils were concerned. The party descended the glacier with the object of joining the Northern party, according to my instructions, but the junction was not effected, owing to the delays which had overtaken Prof. David and his



Fig. 6. Curious Ice Formation.



Fig. 7. Camp, Southern Journey.



companions. Priestley was able to work at the Stranded Moraines and in Dry Valley. The party was picked up by the "Nimrod" on January 25th, after narrowly escaping disaster on a drifting icefloe.

All the members of the expedition were aboard the "Nimrod" on March 4th, 1909, and we proceeded north under steam at once, for the season was advancing, and the sea-ice had commenced to form. We were off Cape Adare on March 6th, and I made an attempt to push on west of Cape North, with the object of securing knowledge of the coast-line. The pack-ice, which was thickening rapidly, and threatened to imprison the ship, prevented the "Nimrod" from going as far as I had hoped, but we got to long. $166^{\circ} 14'E.$, lat. $69^{\circ} 47'S.$, and on the morning of March 8th, from that position, we saw a new coast-line stretching first to the southwards, and then to the west for a distance of over 45 miles. We took angles and bearings, and sketched the outline. Then we went north, and on March 22nd reached New Zealand.

The geological work of the expedition was carried on by Prof. T. W. Edgeworth David and Raymond Priestley. I have already mentioned matters connected with the Great Ice Barrier. Their conclusions in regard to other points are summarized as follows:—

(1) Throughout the whole of the region of Antarctica examined by us for 16° of latitude there is evidence of a recent great diminution in the glaciation. In McMurdo Sound this arm of the sea, now free from land ice, was formerly filled by a branch of the Great Ice Barrier, whose surface rose fully 1000 feet above sea-level, and the Barrier ice in this Sound, in areas from which the ice has retreated was formerly about 3000 feet in thickness.

(2) The snowfall at Cape Royds from February, 1908, to February, 1909, was equal to about $9\frac{1}{2}$ inches of rain.

(3) The névé-fields of Antarctica are probably of no great thickness.

(4) The southern and western sides of the sector of Antarctica south of Australia form a plateau from 7000 to 10,000 feet high,

which may possibly extend across the South Pole to Coats' Land and Graham's Land.

(5) Ross Sea is probably a great subsidence area.

(6) The Beacon sandstone formation, which extends for at least 1100 miles from north to south in Antarctica, contains coniferous wood associated with coal-seams. It is probably of Palaeozoic age.

(7) Limestones, pisolitic in places, in $85^{\circ} 25'S.$, and 7000 feet above sea-level, contain obscure casts of radiolaria.

Radiolaria, in a fair state of preservation, occur in black cherts amongst the erratics at Cape Royds. They appear to belong to the same formation as the limestone. These radiolaria appear to be of older Palaeozoic age.

(8) The succession of lavas at Erebus appears to have been first trachytes, then kenytes, then olivine basalts. Erebus is, however, still erupting kenyte.

(9) Peat deposits, formed of fungus, are now forming on the bottoms of some of the Antarctic glacial lakes near 77° and $78^{\circ} S.$

(10) Raised benches of recent origin extend at Ross Island to a height of at least 160 feet above sea-level.

The fossil in Beacon sandstone found by the southern party in lat. $85^{\circ} S.$, is described as follows by Mr. E. J. Goddard, B.Sc., Macleay Research Fellow of the Linnean Society, New South Wales:—

"Longitudinal sections of the included dark masses give a homogeneous banded appearance of a distinctly organic nature. The banded appearance is due to the vascular nature of the organic elements composing the mass. The whole structure recalls to one's mind the appearance given by longitudinal sections of the xylem portion of the vascular area of a gymnosperm, such as *Pinus*. Only the xylem area is represented in the specimen, no traces of medullary, cortical, or phloem tissue being visible. Medullary rays are present, as shown in the micro-photograph.

"The xylem itself is composed of a homogeneous mass of vessels, tracheidal in nature, no differentiation as regards the vascular elements being present. In places one may readily

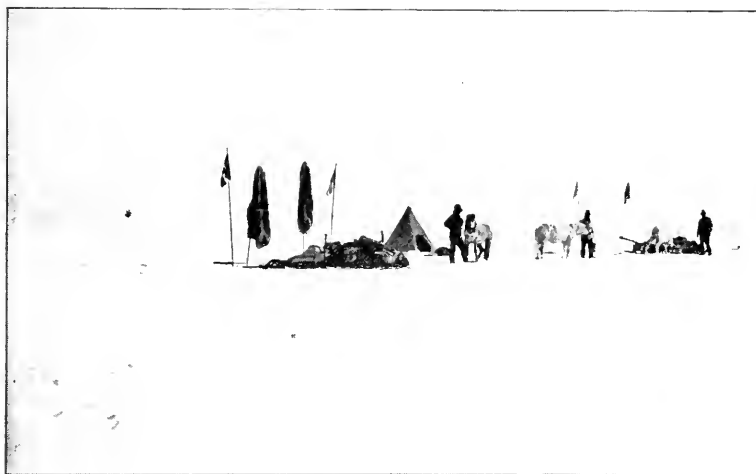


Fig. 8. Camp on Southern Journey.



Fig. 9. View of Land where Coal was found.



make out in longitudinal sections dark opaque bands of much greater size individually than the tracheides. These, in all probability, represent resin passages belonging to the xylem. It would seem, further, that these masses might be considered as being nothing more than an aggregation of material similar in nature to that of the walls, and due to changes under the process of petrification. This, however, is opposed by the fact that they occur even in these small sections fairly commonly and at the same time are all of exactly the same size as regards width. At all events, they represent some definite structure, and in all probability resin passages.

"The walls of the tracheids themselves, seen under the high power of the microscope, appear to be pitted; but the preservation is by no means good enough to warrant any remarks on this, beyond that in the common wall of adjacent tracheides occur clear spaces of the same relative importance as the bordered pits of such a gymnosperm as *Pinus*. These clear spaces occur regularly along the length of the tracheides, and stand out strongly against the dark colour of the walls in their preserved condition.

"The nature of the xylem itself leads to the conclusion that it is a portion of a gymnospermous plant, resembling strongly in nature the same portion of a coniferous plant."

The meteorological observations taken during our stay in the Antarctic have yet to be studied, and only tentative conclusions have, so far, been reached. Systematic observations were taken during the voyages of the "Nimrod" between New Zealand and MacMurdo Sound, and at Cape Royds observations were recorded at intervals of two hours from March, 1908, to February, 1909. During this period no rain fell. The lowest temperature definitely recorded was -57° Fahr. near White Island on the Great Ice Barrier on August 14th, 1908. We were able to secure interesting observations of the upper currents of the air at Ross Island. Reporting on this subject, Prof. David and Lieut. Adams state:—

"At Mount Erebus our winter-quarters were situated in an exceptionally favoured position for observing the upper currents of the atmosphere. Not only had we the great cone

of Erebus to serve as a graduated scale against which we could read off the heights of the various air-currents as portrayed by the movements of the clouds belonging to them, but we also had the magnificent steam column in the mountain itself, which, by its swaying from side to side, indicated exactly the direction of movement of the higher atmosphere. Moreover, during violent eruptions like that of January 14th, 1908, the steam-column rose to an altitude of over 20,000 feet above sea-level. Under these circumstances it penetrated far above the level of a current of air from the pole northwards, so that its summit came well within the sweep of the higher wind blowing in a southerly direction, the result being that the steam-cloud in this region was dragged over powerfully towards the south-east. On such occasions one usually saw evidence of two high-level currents, the one coming from a northerly direction, its under limit being about 15,000 feet above sea-level; and the other, or middle current, from a southerly quarter, usually blowing towards the east-north-east, having its upper limit at 15,000 feet normally, while its lower limit was between 6,000 and 7,000 feet above sea-level. While these two currents were blowing strongly, there would frequently be a surface current blowing gently from the north. This would bring up very dense masses of cumulus cloud from off Ross Sea. The cumulus would drift up to the 6,000 or 7,000 feet level on the north-west slopes of Erebus, and then the tops of the cumulus would be cut off by the lower edge of the northward-flowing middle current. Wisps of fleecy cloud would be swept along to the east-north-east, torn from the tops of these cumulus clouds by the middle current. Our observations showed that during blizzards the whole atmosphere from sea-level up to at least 11,000 feet moves near Cape Royds from south-east to north-west, and the speed of movement is from 40 up to over 60 miles an hour. After and during the blizzard the middle air-current, normally blowing from the west-south-west, is temporarily abolished, being absorbed by the immense outrushing air-stream of the south-east blizzard. During a blizzard the air was generally so thick with snow that we were unable to see the top of Erebus. At the end of a blizzard the air-current over Erebus



Fig. 10. Southern Party after their return.



Fig 11. Prof. David, Douglas Mawson and Dr. Mackay at the South Magnetic Pole.



became suddenly reversed, the steam-cloud swinging round from the south to the north. After a time, following on the conclusion of a blizzard, a high-level current was seen to be floating the cirrus clouds from the south-east towards the north-west, and the steam of *Erebus* would stream out towards the north-west. We could not account for this high-level south-easterly current: it looked like a reversal of the usual upper wind, and it appears to be a fact new to meteorological science."

In this article I can only indicate the scientific results of the expedition, as, apart from the new geographical knowledge secured, we were able to throw some additional light on the problem presented by the Great Ice Barrier. The disappearance of Balloon Bight shows clearly that the recession noted since the days of Sir James Ross continues, and suggests that very large portions of the Barrier Edge may occasionally "calve off." The trend of the mountains discovered on the southern journey indicates that the Barrier is bounded by mountains which run eastward along the 86th parallel, about 300 miles from the sea-edge. The great glacier up which we marched to the polar plateau shows that the Barrier is fed to some extent from the highlands of the interior. It would seem, however, that in the main the Barrier is formed of superimposed layers of snow, and some interesting observations were secured in this connection. We formed the opinion that at Cape Royds the annual snowfall is equal to about 9·5 inches of rain. The southern dépôt party, in January, 1909, found dépôt A, left by Captain Scott in 1902 on the Barrier off Minna Bluff. A careful examination showed that the dépôt had been moving bodily to the east-north-east at a rate of a little over 500 yards a year, while there had been an accumulation of about 13 inches of hard snow above the dépôt during each year. A determination of the density of the snow showed that the snowfall on that part of the Barrier had been equal to about 7·5 inches of rain per year. If it is assumed that the rate of accumulation of solid snow over the Barrier is 12 inches of consolidated snow per year, then it follows, since the Barrier extends south for about 300 miles, and is moving northward at the rate of about one-third of a mile per year,

that a layer of snow deposited 300 miles inland will be covered by a depth of 900 feet of snow when it reaches the Barrier edge 900 years later. This theory suggests that the Barrier is an accumulation of snow rather than of glacier ice, and was supported by the evidence of bergs which were examined by the expedition. The typical Antarctic berg is formed of consolidated snow. The question of what becomes of the ice from the inland glaciers remains unanswered. The Barrier is certainly afloat at its northern edge, and perhaps the ice, weighed down by superimposed snow, is thawed away by the sea water. Some true icebergs are found in the Antarctic.

The expedition made a special study of meteorological optics, and some very interesting observations were made, and will be dealt with by the scientific members in the memoirs. The curious "earth-shadows" were observed in a variety of forms. Some of them seemed clearly to have a relation to the relative positions of Mount Erebus and the sun. Other forms were not so easily explained. In the spring, when the sun was low in the northern sky, we saw above us six parallel earth-shadow beams, directed from the sun.

The scientific memoirs of the expedition will deal in detail with geology, biology, meteorology, magnetism, physics, chemistry, and mineralogy, tides and currents, optics, and other scientific subjects. We were a small party, and of necessity a considerable part of our time was occupied in the necessary routine duties incidental to daily life in the Antarctic, but we tried to cover all the ground possible in the various branches of scientific knowledge. It is probable that most of the volumes containing our scientific records and conclusions will be published within the next twelve or eighteen months.

The last stage of the expedition was a search by the "Nimrod" for some of the charted southern islands, the existence of which is doubtful. The ship sailed over the positions assigned to the Royal Company Island, Emerald Island, the Nimrod Islands, and Dougherty Islands, without having sighted land.

OSAKA: ITS HISTORY AND DEVELOPMENT.

By SEISUKE YAMANOBE.

(Addressed to the Society in the Geographical Hall on
Tuesday, November 23rd, 1909.)

"Osaka" is the name of a town sometimes called "Oriental Manchester" from its commerce and industry. Before I speak about Osaka I would like to give you a brief account of Japan, then the history of Osaka, and afterwards a description of the town and its people.

The word "Japan" is not the proper name of our country. The correct name is "Nippon," which means "The Land of the Rising Sun." The name Japan has been applied to us by other nations in consequence of a certain commodity we export in considerable quantities, viz., japanned or lacquered goods.

The Japanese are by race Mongolians who came, many centuries ago, from the Continent of Asia in successive waves of immigration. How long ago we do not know. Prior to the Mongolian occupation, another race called Ainu occupied the whole of the land now known as Japan.

The first written story we have is "The Record of Ancient Matter" called "Ko-ji-ki." This was written about the year 712 A.D. In it the narrative tells, after many stories of the gods of heaven, earth, and hades, that the ancestors of our emperor came down from heaven to the southern part of Japan. Just before 660 B.C. one of these ancestors went eastward, driving away the people of Ainu to the north, and after many victories finally conquered one half of the country. Making Unebi, near Osaka, the capital, he crowned himself as the first Emperor of Japan. He is called Emperor Jimmu and he lived 137 years.

For three centuries after his death the Record is silent, then there was a rising of the people which the then Emperor quelled by sending his princes, who put down the riots and restored peace. At the end of the 3rd century the Empress Jingo sent her army and navy to Korea and conquered it. Korea was under Japanese rule until the middle of the 7th century, during

which period Chinese civilisation was introduced into Japan as well as the Religions of Confucius and of Buddha.

After very many years the power of the Emperor was transferred to the warriors, causing the rise of two factions. Two great families began the strife in the 12th century A.D., and then for 500 years continued it intermittently.

Family fought against family, caste against caste, and adventurer against adventurer. Civilisation almost perished, cities were destroyed and in the end there were more than 20 heroes fighting against each other. At last a great warrior arose and conquered the whole of Japan. This was Hideyoshi who built a castle in Osaka on an eminence where a large temple had once stood.

This was when Osaka became an important town in Japan. The most trusted lieutenant of Hideyoshi was Tokugawa Ieyasu who was his equal in war and his master in intrigue. After Hideyoshi's death, Ieyasu turned against the late Emperor's son, defeated him in battle, destroyed his power and took the Empire unto himself.

He founded the house of Tokugawa and lived in Yedo, the present Tokyo. He rewarded his chief soldiers and the members of his family with land and honour. He forced the barons to have two homes, one in Tokyo and the other in their own particular province. In order to gain complete mastery and control of their person, their actions and wealth, he compelled them to live one year in Tokyo and the next year in their own province. This continued for some time, and as when the Baron lived in his province his family had to live in Tokyo, a tremendous expense was entailed upon the feudal lord and at last drained his purse. This was called "Putting the family in pawn."

By such means the house of Tokugawa ruled for 500 years, 15 generations of which passed in peace. Then a new phase entered in Japanese life. Foreign guns were heard in Yedo Bay in 1853 A.D. At this period the entire nation awakened up as from a long dream. A treaty with the United States of America made in 1854 was followed by similar treaties with Great Britain, France and Russia. At the same time that the

people woke up from their long sleep, the barons who were against the House of Tokugawa, and the people who had been taught the idea of loyalty by our literary men became leaders of a Political Revolution which after many struggles and sacrifices forced the House of Tokugawa to give up their power to the real Emperor and so prepare the way for the great development of Japan as it now is.

Retracing our steps to the end of the 10th century just after the Empress Jingo had conquered Korea, her successor Nintoku commenced to build a palace in Osaka, when the history of Osaka began.

The Emperor Nintoku was a very kind-hearted man. One day when he went up the tower of his palace and looked down upon the city he judged that his people were suffering badly from poverty and want, as he saw very few kitchen chimneys emitting smoke. He decided to discontinue the taxes for three years and afterwards extended the time to 5 years. During this period the people acquired much wealth, while the Emperor was quite satisfied with his ruined palace and worn-out clothes. At the end of the 5 years the people voluntarily rebuilt the palace as a mark of their gratitude,—a novel way of settling Budgets.

When Hideyoshi built his castle in Osaka, it became the capital of Japan and the centre of business. Afterwards Tokugawa Ieyasu made Tokyo the capital and Osaka did not prosper, nor did it grow as in the time of Hideyoshi, but it is still the centre of commerce and has been so throughout Japanese History.

Osaka lies in the centre of Japan, where the river Yodo runs into Osaka Bay from Lake Biwa, which is the largest lake in Japan, so that it is in a good position to facilitate internal communication by land and water as well as to various parts of the world.

It is about 30 days' journey from Manchester via the United States of America, and 45 days by the Indian Ocean and through the Suez Canal. The shortest way is through Siberia: one might get there in about 15 days; but the most comfortable route is via Canada in 24 days.

Osaka has a population of 1,200,000 people and about 280,000 houses, and covers an area of 6 miles. It is divided into four parts—North, South, East and West. There are about 100 foreigners in the town.

The contour of the town is very flat from the centre to the coast, but there is a long hill which runs along the Eastern part from North to South. The river Yodo enters the town at the North-Eastern angle, and before flowing into Osaka Bay, divides into three branches.

Communication in the town is by canal, tramway and rikisha. In the canal there are boats to carry goods, and boats propelled by gas engine power to convey passengers.

We have about 5 different railways round Osaka which run to all parts of the Empire. We get to Tokyo in 18 hours, the distance being about 380 miles. Until very recently ships of all kinds used to come up the river to the town, but the river is not sufficiently wide and deep to permit large ships to enter the river, also causing a congestion of the traffic. To overcome this, the Osaka Corporation decided to raise a public loan and build a large harbour, and a ship canal at the outside of the town so as to lead the main flow of water through the new route, allowing only a certain quantity of water to pass through the town. This overcame the trouble of a shallow river, and big ships are now able to enter the harbour. Unfortunately, however, there is a larger harbour at Kobe, a distance of 23 miles, which has taken a very large amount of trade from Osaka, and the new harbour is not as useful as was anticipated. The pier and landing stage are favourite places for fishing, a veritable haunt for lovers of the art of Isaac Walton.

Notwithstanding these drawbacks the trade of Osaka is increasing at a rapid rate. It has grown 1300 per cent. during the last 10 years whilst the other big harbours, such as Yokohama and Kobe have only increased 200 per cent. in the former and 300 per cent. in the latter. The reason of this is that the growth of industries in Osaka has been rapid and the organisation necessary for trade is complete and up to date.

The chief imports are raw materials, *i.e.*, cotton, rice, sugar, leather and wool. From these we manufacture and export

yarns, calicos, matches, silks, rice wine, machinery, etc. The total exports amount to about £4,600,000 and imports about £2,600,000.

To cross the river and canal there are iron and wooden bridges, and at the mouth of the river, where it is too wide to build a bridge, there are ferry-boats both for passengers and goods.

The streets are generally very narrow though very interesting. When you are walking along them you see fine stone and brick buildings of three or four stories high at one corner, and next to them a typical Japanese wooden house, built in the style of the English bungalow or a two storey building. The ordinary streets have the same average width as the street in the front of this building. Some are a little wider, but even these do not exceed the width of Cross Street in your City of Manchester. The principal streets are so crowded with people and carriages that it has become necessary to pass a bye-law prohibiting the passage of carriages along them. The Osaka Corporation are rebuilding the roads and making them wider for the purpose of running tram-cars through them.

When they are finished they will be much wider than your Market Street. As you have in Manchester a conglomeration of vehicles such as motor-cars with their shrieks, sometimes musical sometimes otherwise, electric cars followed by hand-carts and cabs, so have we in our streets a variety of vehicles corresponding to yours in slightly different forms: a rikisha, containing a Japanese lady dressed in her kimono, broughams, bicycles, and carts drawn by oxen. We have not yet motor cars, so have not had the experience of the blind man, who on being asked by a policeman if he had seen a motor car pass replied, "I have not seen one but I have smelt it." The ordinary Japanese vans are drawn by men, but if they are heavily loaded, then oxen or cows are used instead of horses.

The houses of Osaka are usually made of wooden poles placed on stone, and dividing walls are built of bamboo cane. These are placed crosswise forming a kind of lattice; the interstices are made up with a kind of plaster composed of clay and cement. The roofs are covered with tiles and the floors with

rush mats about three inches thick. The people leave their shoes or wooden clogs at the house door and sit on rush mats. We have no stove nor firegrate in the room, but we use square or round portable fire boxes full of ashes and charcoal. The drawing room is used as bedroom and drawing room, as we sleep in it, making beds on the floor. In the morning we wrap up our beds and put them away in a cupboard. There are no walls between the rooms in the house. Separate apartments are made by means of sliding screens. This method has an advantage, as we can make several small rooms into one big one at pleasure by taking the screens out.

Osaka people are keen business men. They are chiefly engaged as brokers, in rice, dressing goods, fish, banking, etc. The retail shopkeepers usually ask extortionate prices from their customers. A little comedy is often played in these retail shops when the customer demands a reduction of price. The humorous side of the comedy is that the shopkeeper will reduce the price to a certain extent if asked, but does not if the customer is satisfied to pay his price. This does not apply to wholesale houses. One day before I came over to England I saw two girls and a boy of about six years old playing at the side of the street. They were playing shop as English little girls and boys do, the boy being shopkeeper and the girls customers. The girl said how much does the doll cost; the boy answered 2d. Then the girl asked for a reduction in the price saying it is much too dear. The shopkeeper said it is not dear, the material is good; he wished them to buy it and try it. This is only a simple story, but from it you can understand how, even in childhood, Osaka people show business ability.

The shopkeeper and his assistants live in the back room or in the room upstairs over the shop, and even the large shopkeepers do so. They do not live away from their place of business as many English people do. We have the merchant in Japan called "Goshu Merchant." This name is derived from the province of Goshu. They and their ancestors have come from that province and form the greatest number of merchants in Osaka. They leave their family in Goshu as they don't want to think of home when they are at business, upon which their

thoughts are intent, until they retire. They go home once or twice a year.

They are trained from boyhood to business habits, starting as doorboys, cleaners, and messengers. They have a few weeks holiday to go home and they are urged on to greater efforts by the influence and the example of their retired and successful neighbours. The peculiarity of these merchants is that they are patient and can work hard with ordinary food, rarely taking any luxury. Beside this if they misconduct themselves or are dismissed by their employer, it is useless for them to go home, as their friends and neighbours will not speak to nor take any notice of them. So they are careful to do their best in order to succeed in business.

The industry of Osaka has grown greatly of late. Its chief industries are cotton spinning and weaving, sulphur, cement, glass, brick, machine making and shipbuilding. Cotton industry being of paramount importance as there are, in this town, ten cotton manufacturing companies out of the 37 mills in the whole of Japan. The greatest drawback to this industry is scarcity of workpeople, although the labour is very cheap. We have to send what we called special agents all over Japan to collect workpeople for our mills. This entails considerable expense, and when we have got them we have to build special quarters for them. A Japanese mill manager has more to contend with than the manager of English mills. Not only has he to attend to the buying of cotton, selling of yarn and cloth, but he has also to see to the housing, feeding, doctoring and organising of his people. His mill is his territory, and he has to see that all and everything goes on harmoniously, both to the comfort, shelter and entertainment of his people, and all other details connected with his mill that it may show a profit to his employer.

The people of Osaka do not realise the importance of education, consequently it has not attained the excellence that is found in your country. They prefer to put their children into business as soon as it is possible to do so after the child has finished the elementary schooling compelled by our laws. We have, however, 4 middle schools for boys, and higher grade

girls' schools, commercial and technical schools. In some towns there are more schools than we have in Osaka, though the other town may be much smaller.

Sunday is the day of enjoyment. On that day every place of amusement is open, and the railway companies issue special excursion tickets like your companies in this City at cheap rates, and the people take advantage of them to get out into the country.

Japanese shops are open from 6 o'clock in the morning to 12 o'clock at night. Japanese mills work day and night with two shifts of working people, even on a Sunday. Our shop assistants, mill workers and others take a holiday about twice a month in turn. Osaka people find a great enjoyment in going to the theatre and to tea-houses where Geisha girls sing and dance. Chess, billiards, etc., are also in great favour. Some people take pleasure in picnics, fishing, hunting, etc.

But the craze for football and tennis has not yet got to Osaka, though these games are played by students. There is a very old sport which in Osaka is watched with keen interest: the 10 days' wrestling matches held twice a year where the champions from East and West defend their titles against all comers.

Marriages in Japan are usually arranged by the parents: the father chooses a wife for his son and a husband for his daughter; then he places his selection before his child, and if he or she does not approve of the choice another one is selected; if they agree the lucky day for the wedding is fixed. The bride wears white, the colour of mourning, as a token of her death or separation from the home of her parents. The wedding takes place in the bridegroom's house, where the bride drinks two tiny cups of wine with her bridegroom and retires to her room where she changes her white robes for a gown of a bright colour and re-enters the room and drinks three more cups of wine. Then the ceremony is completed, they are man and wife. After the marriage the majority of young couples used to go to live with the bridegroom's parents but since European ideas have come into our country many of our people follow

the European fashion, but working class people still keep to the old custom.

The average wage earned by our working people in Japan is from 1/- to 2/- a day. The house builder gets most wages, 1/10 to 2/2 a day. With this wage they can keep their wives and two or three children. A man who gets between £8 and £10 a month is called rich and lives the life of a gentleman, in comfort, some having a cottage at the sea side or in the woods.

We live chiefly on rice, vegetables and fish. If any meat is on the table it is considered a very good dinner and a special luxury.

Osaka people are not religious, as other people are, although there are plenty of temples, shrines and churches, but except with Christians it is only the old people who take any interest in religious matters. The Japanese Christians are very strict and they are non-smokers and total abstainers from intoxicants.

KINGSTON-UPON-HULL GEOGRAPHICAL SOCIETY.

(Meeting held in the Banqueting Chamber, Town Hall, Hull,
on Friday, December 3rd, 1909.)

Inaugural Address by

J. HOWARD REED, F.R.G.S.,

*Vice-President and Hon. Secretary, Manchester Geographical
Society.*

I FEEL much honoured that some of my Geographical friends should have thought it fitting that I should be invited to attend here this evening to address you upon a subject in which I am most deeply interested, owing to my intimate association with the well-known Geographical Society of Manchester. It is the reputation of the Society in the Lancashire city, of which I am proud to be the Hon. Secretary, that has brought me the honour of my appearance here, rather than any merits of my own; but I trust that our consideration of the matter we have in hand to-night may result in the establishment of a prosperous and useful Society in this large and important seaport.

Perhaps I may be permitted to say that, although I have never before had the pleasure of visiting Hull, the city is in some measure responsible for the interest I possess for geographical science. Many years ago I made a voyage to Japan in a vessel designed for the Japanese Government by my late uncle, Sir Edward Reed, which was one of two sister ships, built in Hull and Milford Haven respectively, and both of which were engined by the Earl's Shipbuilding Co. Ltd., of Hull. That voyage to Japan, and the more leisurely voyage home again, gave me as a young man an object lesson which awakened within me special interest in the great world at large which has never since left me, but, on the contrary, seems to increase as I get older.

It may be a matter of surprise to some people that up to this time so important a seaport as Hull should be without a Geographical Society. When one remembers, however, how slowly English people move in matters of this kind, how little

interest, comparatively, is taken by the majority in anything outside their own special business, and how little is known of the world at large, or even of our own Empire, by the average citizen, it is perhaps not so surprising after all. The study of geography on the Continent of Europe is taken up much more seriously than in this country, and most of the cities of any importance have their active societies, many of which are assisted in their finances by either the government or the municipality.

In this country, up to the year 1884, only one such society existed, the great Royal Geographical Society in London, the premier society throughout the world. In that year, however, the Manchester Society was launched, but only after one previous abortive attempt, and it struggled for years with many adverse difficulties, and was probably at times only kept alive by the persistence, enthusiasm and unselfish work of its Secretary, the late Mr. Eli Sowerbutts, who was a unique personality. A few weeks later the Royal Scottish Geographical Society was started, and this institution, with branches in Edinburgh, Glasgow, Dundee and Aberdeen, has ever since carried on a most useful work.

The Tyneside Geographical Society followed after a short interval, and in more recent years Liverpool and Southampton have established societies, and a year or so ago a similar society was started in Leeds. It is perhaps of interest to note that at one of the earliest meetings of the Manchester Geographical Society Mr. H. M. Stanley (afterwards Sir Henry Stanley) advocated the foundation of similar societies in Liverpool, Glasgow, Edinburgh, Newcastle, Hull, Bristol and Plymouth in the order given, and it will be noted that if a society for your city is founded to-night, Hull will take its place almost in the exact order that was suggested by the great explorer twenty-five years ago.

It can with safety be said that the study of geography in its widest sense is of extreme importance, especially from a commercial point of view. This fact was recognised at the outset by the Manchester Society. In the official statement of the "Object and Work of the Society," which is printed in every volume of its Journal, it is stated that: "The object of the Manchester Geographical Society is to promote the study of all branches of geographical science, especially in its relation to commerce and civilisation." The same official statement

goes on to lay down the scheme of work by which the attainment of the object is to be promoted. It states:—

“The work of the Manchester Geographical Society is carried on: 1. By the study of official and scientific documents; (*a*) communications and correspondence; (*b*) communications with learned, industrial and commercial societies; (*c*) by correspondence with Consuls, men of science, explorers, missionaries and travellers; (*d*) and by the encouragement of the teaching of geography in schools and colleges. 2. By meetings at which papers are read, or lectures delivered by members or others. 3. By examining the possibility of opening new markets to commerce, and collecting information as to the number, character, needs, natural products, and resources of such populations as have not yet been brought into relation with British commerce and industry. 4. By promoting and encouraging, in such ways as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less-known regions of the earth. 5. By enquiring into all questions relating to British and Foreign colonisation and emigration. 6. By publishing a Journal of the proceedings of the Society, with a summary of geographical information. 7. By forming a collection of maps, charts, geographical works of reference and specimens of raw materials and commercial products.”

If to-night it is decided that Hull shall possess a Geographical Society it will probably be by following similar lines to those just described that the desirable object will be accomplished.

It has been well said that all departments of knowledge are in a sense branches of geography. The late Mr. Eli Sowerbutts used to say: “Regard the earth as the home of man, then anything which has any bearing or relation thereto is geography”; and in that sense he regarded all the other sciences as merely departments of geography. However this may be, we may all agree that geography touches mankind at more points than any other science, and that therefore it should have the widest possible interest to us all. It has been remarked with truth that the earliest of all studies with which the human child is brought into contact is that of geography. The first observations of a babe in its cradle are undoubtedly more or less geographical. It first learns the position of the objects it sees around it in the room in which its earliest days are passed, the sense of direction is soon added to that of

relative position, and in due course its geographical studies are extended to the immediate surroundings of its home, and as years advance to the district, and so on when the school age is reached to county, the country, and the world at large. The study is continued right through life by the thoughtful and observant person.

All will admit that there is no greater aid to general education than travel. The traveller gains an idea of distance and proportion not obtained in any other way. He gets a knowledge of countries, their climatic peculiarities and commercial products, of their peoples and the manners and customs of the same. This gives the traveller who moves with his eyes open and his mental sense awake a breadth of view which tends to modify his inherited prejudices whatever they may be. It makes him more liberal-minded and more appreciative of the good qualities of other peoples, and of the advantages of their respective countries. At the same time, it makes him appreciate the blessings he enjoys at home, and supplies him with ideas for the improvement of himself and his nation.

Travel with this broadening influence is not possible to all. Many have not the leisure necessary, and the vast majority have not the means. In the absence of the opportunities for personal travel probably the next best thing is the study of travel literature. This, however, is a wide subject and rather difficult to follow systematically by the average person whose days and evenings are very crowded with work of one kind and another.

To the poor person, too, it is often not easy to get the books required, even though Free Libraries may be at hand. Such reading, too, loses a good deal of its educational value unless it can be pursued in conjunction with good maps and, above all, with some capable personal guide or assistant who can explain difficulties, stimulate interest and tend to make the study a living reality.

It is at this point that I think it becomes clear of how much value the work of a well-organised Geographical Society may be. The individual at Geographical meetings gets within an hour or so, at regular intervals, the boiled-down experience of a host of travellers as well as the personal knowledge of the speaker. The country or district he would like to explore, but cannot, is laid bare before him by a capable guide who makes it literally live before the eyes of his imagination.

There can be no doubt that a well-prepared geographical lecture in the hands of a capable man is of great educational value. I say in the hands of a capable man. This is an all important point. I have listened to geographical discourses which have simply given me the creeps, and make me long for the end to come. It is possible even for an otherwise valuable address—I mean one which would read well in print—to be so mangled in the delivery as to be really of little or no value to the hearers. This is due to the manner, or rather want of manner, of the speaker. It is highly important that the geographical lecturer, of all others, should be a man with some sparkle in his style, and that he should also possess some imagination. It is not sufficient for him to be saturated with his subject; he must also have the ability to bring it before his audience with some life and reality. He must be able to clothe the dry bones of his theme with living flesh, and he must be able to breathe into it, spirit, lightness, brightness. His personality and individuality must be such that he from the first catches the ear of his audience, and from the outset rivets its attention.

Enthusiasm is the secret of the art, and the almost certain but necessary element of success. If a speaker at the close of an hour's address is told by any of his hearers, "I could have listened for another hour," or "I had no idea the time had gone so quickly," he may be sure that he has scored.

In discussing the formation of a Society such as that now proposed for the city of Hull it is well to consider the useful work that the various Geographical Societies have been able to accomplish. The great work of opening up the dark places of the earth to the knowledge of mankind during the last few generations has been largely due to the influence and encouragement of the Royal Geographical Society. Consider the work done during the last fifty years in Africa and Asia and in the Polar Regions, both north and south. The work of Livingstone, Burton, Speke, Stanley and a host of smaller men has brought a knowledge of the interior of the Dark Continent to all of us, and made these regions available for commercial effort. Think of the ignorance of Africa which existed fifty years ago, and consider the almost complete knowledge we now possess of the Lake Regions and of the mighty rivers which form the natural arteries into the interior. Think of Africa to-day with its thousands of miles of railways, with its linked up centres of

civilisation, and with the old horrors of the slave-trade wiped out. Above all, think of the enormous populations now placed on the high road to civilisation and enlightenment; and, further, think of the vast area of new markets made available.

The opportunities for such a society as you may found in Hull are extremely great. Your city already holds a very prominent place in the commerce of the country, and by its vast shipping interests is linked up very closely with the outside world. I think there is vast scope among the 270,000 of your population for a flourishing and most useful Geographical Society, and I trust that the outcome of this meeting may be that such a society may be started.

The work of establishing a useful society will not be easy, but will need much persistent and untiring application; but it is astonishing what a great work may be accomplished by a small band of devoted, determined and enthusiastic men. I feel sure you can do it here; I hope you will, and I am convinced that all geographers and lovers of the science will wish you well, and help you where they can.

The story of the struggles of the Manchester Society during twenty-five years, and the measure of the success attained may afford some hints and give some encouragement to the geographical enthusiasts of Hull.

The foundation of the Manchester Society in 1884 marked the second attempt to accomplish the purpose, the first effort having fallen through for want of support. For several years the membership was comparatively small, and in all probability the second attempt would have proved a flash in the pan had it not been for the determination and self-sacrifice of the first Secretary, the late Mr. Eli Sowerbutts, and the backing he received from a few devoted supporters. Difficulties to Mr. Sowerbutts were an incentive to work, luke-warmness on the part of others generated a flaming fire of energy in him. Enthusiasm and perseverance on his part excited the imagination of those with whom he came in contact. It arrested their attention, awakened their imagination, stimulated their interest, and compelled them, often before they fully realised it, to put their shoulders to the wheel.

For a time the new Society in Manchester was able to command good audiences to support travellers and explorers of note who were induced to visit the city. A Geographical Journal of excellent character was started in connection with the Society,

in which the papers read at the meetings were reproduced. Correspondence with kindred societies all over the world was commenced, and an exchange of publications organised.

For several years the work of the Society was carried on in two comparatively small rooms at the top of a rather old-fashioned building, one of which rooms served as a library and the other as an office. The smaller and less important meetings were held in the library just mentioned, while for larger meetings one of the public halls in the city was hired. It may be mentioned that many useful meetings were held, and numerous papers were read under these conditions.

After some years the Society obtained three floors of another old building which provided better accommodation, and these were altered and fitted up to suit our purposes, a special sum of money being raised among our members to meet the expense. Our membership on the whole continued to grow, although sometimes the new members added during a year were more than balanced by resignations of the lukewarm or those who left the district, and by death. During the whole of this period we often had great difficulty in getting a satisfactory attendance at our ordinary meetings unless we had a visit from some very well-known or striking personality in the geographical world. Often a number of the more enthusiastic found it necessary to work up a sufficient audience by personally canvassing members and friends and inducing them to come.

At a later date the lease of the land upon which our old building stood was due to fall in, and the Society were given the option of taking it up. At this stage two of our members undertook the responsibility of agreeing to take over the lease and placing a building upon the site. The Geographical Society were not in a position to undertake this work, but a limited company was formed, all the shareholders of which are members of the Society, and the old building was pulled down and a new one, costing about £8,000, has been erected in its place. The Geographical Society are tenants of the Building Company, and the two upper floors of the building have been specially designed to suit the requirements of the Society, and contain a lecture-hall, library, museum, members' room and Secretary's and clerks' offices. The remainder of the building is let off as offices, etc., to various tenants, and at the present time the Building Company is able to pay a small dividend.

Since the Society obtained its present satisfactory home its

membership has increased and its general usefulness has extended. The old days of scanty audiences have passed away, and after twenty-five years of strenuous work the Society has been able to impress the Manchester public with the usefulness and interest of the work it is doing. Our difficulty now is not to get an audience, but to prevent overcrowding at our meetings. The Lecture Hall, as originally constructed, was designed to accommodate about 250 people, but last summer we were obliged to ask the Building Company to add a gallery to the hall. This has been done, the Society paying additional rent to meet the increased outlay of capital, and even now, with room for 350 people, our hall is frequently somewhat uncomfortably crowded at our weekly meetings.

The Manchester Geographical Society hope some day to become the actual owners of the buildings they occupy. Several members have already transferred their shares to the trustees of the Society. Other shares have become the property of the Society in other ways, and we do not forget to give gentle hints from time to time to the effect that when our shareholding members come to make their wills the Society should be held in remembrance when the bequest of such shares is arranged.

During the twenty-five years the Manchester Society has been at work it has been able to bring practically all the great contemporary geographers, explorers and travellers to the city, and some of the most remarkable geographical demonstrations it is possible to imagine have been carried out. We have had visits from the late Sir Henry Stanley, Dr. Nansen, Dr. Sven Hedin and Sir Ernest Shackleton, and on the visits of each of gentlemen we have filled the celebrated Free Trade Hall to overflowing. We have also been visited by Sir Frederick Lugard, Sir William MacGregor, Sir Clements Markham, Joseph Thomson, F. C. Selous, Archibald Colquhoun, Dr. Vambery and a host of other more or less well-known travellers.

It should not be imagined that the present position of our Society has been attained without untold anxiety and continued and continuous effort, nor that many difficulties and even serious crises have not had to be faced and overcome, and that other and similar anxieties will have to be met in the future.

It has only recently come about that we are able to present an annual balance-sheet without a balance on the wrong side of the account. It is only fair to acknowledge, too, that the

Society has had the benefit of much generosity and devotion on the part of a few of its well-to-do members. At the same time, in order that the projectors of your new Society here in Hull may not be discouraged, I may say that such generosity has been of reasonable and mostly of modest dimensions, and only what I expect may equally and easily be forthcoming in your own city.

Returning to the proposed Geographical Society for Hull, perhaps I may be allowed to make a few suggestions which may prove of some assistance to you. In this connection I would suggest that you take your first step now. Let those gathered at to-night's meeting form the nucleus of the new Society, which should be here and now constituted. A provisional Council with power to add to their number should be at once appointed to undertake the work of organisation and to canvass for additional adherents. I am inclined to think it would also be well to at once fix the annual subscription, and I do not think you will be wise to make this too small. We find one guinea per annum little enough in Manchester. The next step, which, if possible, should also be taken to-night, is to secure a suitable Hon. Secretary. If I may be permitted to offer advice on this point I do not think you can do better than secure the services of the gentleman who has been acting for you *pro. tem.* I have known him since his boyhood, and know that he has always been keenly alive to the importance of geography. He belongs to a profession which shows that he has had the right kind of training for the work, and he is, moreover, the son of a gentleman who has made his mark in geographical circles, as a traveller, with his pen and on the platform. Having got so far, leave the actual work of organisation to the Provisional Council, but ask them to report progress at an early date. I need hardly say that this Committee should get to work at once, their first and most important duty being that of a systematic canvass for members. Their earliest and most special attention should be given to the best known and most popular people in the city. Shipping magnates, merchants, manufacturers, members of the Chamber of Commerce and the City Council, magistrates, clergy and professional men of all kinds should be seen and, so far as possible, convinced of the need of the movement, and their support and interest secured.

An important point is to secure a good President, and for this office I need hardly say you should obtain the most

influential man you possibly can. I might mention, in passing, that the first President of the Manchester Society was the Duke of Devonshire, grandfather of the present Duke, while our second and present President is His Royal Highness the Prince of Wales.

I venture to suggest, and I trust I may not be considered egotistical in doing so, that you take the general organisation and methods of the Manchester Geographical Society as your model, and of course wherever you can you should improve upon them. Above all, get to work at once, take up the new venture with energy and enthusiasm and work for success with will and determination. Do not let the heated iron get cold, but set to work and hammer out your product while the raw material glows with heat.

In conclusion, I can assure you that your efforts will be watched by the Manchester Society with sympathetic interest, and I feel sure I can promise that if we can in any way assist or stimulate your endeavours you may depend upon us. I am proud to have played a modest part at the founding of the Geographical Society of Kingston-upon-Hull, and I trust that it may speedily become a powerful institution in your city. May it have a long and an abundantly useful career.

INTERNATIONAL MAP OF THE WORLD.*

At the International Geographical Congress which assembled at Geneva in 1908 certain detailed resolutions on the subject of the production of an international map, on the scale of 1: 1,000,000 were unanimously voted. The Swiss Government forwarded these resolutions to the British Government, and the latter Government, realizing that the resolutions would remain inoperative until officially adopted, issued invitations to the Governments of Austria-Hungary, France, Germany, Italy, Japan, Russia, Spain and the United States, to send delegates to an official Committee, which should discuss the question of standardizing the International Map and should make definite recommendations. The British Government also invited delegates from the Dominion of Canada and the Commonwealth of Australia.

List of Delegates of the different Governments represented, who met at the invitation of the British Government in London in November 1909, forming the International Map Committee, and unanimously voted the Resolutions which follow the list:—

AUSTRIA: Professor Dr. E. Brückner, of the Imperial Royal University. AUSTRIA-HUNGARY: Counsellor V. H. von Hartenthurn, of the Imperial and Royal Institute of Military Geography. FRANCE: M. Beurdeley, Sub-Director of the Geographical Service of the Colonial Office; M. Ch. Lallemand, Director of the Survey of France; Commandant Pollachi, head of the Cartographical Section of the Geographical Service of the Army; M. Vidal de la Blache, Professor of the University of Paris. GERMANY: Professor Dr. J. Partsch, of the University of Leipzig; Prof. Dr. A. Penck, of the Geographical Institute of Berlin University; Major Baron von Tettau, of the General Staff; Major Wilckens, of the General Staff. GREAT BRITAIN and BRITISH DOMINIONS: Lieut.-Colonel C. F. Close, head of the Geographical Section of the General Staff, Hon. Secretary, Royal Geographical Society; Colonel S. C. N. Grant, Director-General of the Ordnance Survey, President of the Committee; Dr. J. Scott Keltie, Secretary of the Royal Geographical Society. AUSTRALIA: Mr. C. W. Darley. CANADA: Mr. R. E. Young. HUNGARY: Dr. Ludwig Loezy, President of the Royal Hungarian Geographical Society, with his secretary, Dr. Kogutovicz. ITALY: Lieut.-Colonel C. E. Caputo, of the General Staff. RUSSIA: M. E. Markow, of the Imperial Russian Geographical Society. SPAIN: Don Luis Cubillo, head of the Cartographical Department of the Geographical and

* Resolutions and Proceedings of the International Map Committee assembled in London, November, 1909. With diagrams, plates, and tables. London: Printed for His Majesty's Stationery Office. Price 2/-.

Statistical Institute. UNITED STATES: Mr. B. Willis, and Mr. S. J. Kubel, of the United States Geological Survey. Secretary of the Committee: Captain T. T. Behrens, of the Geographical Section of the General Staff. Adjutant to the President: Captain W. J. Johnston, of the Ordnance Survey.

RESOLUTIONS.

GENERAL RESOLUTION.

1. It is desirable that a uniform set of symbols and conventional signs be adopted by all nations for use on the map of the world on the scale 1:1,000,000, and that the limits of the sheets, etc., shall be uniform.

AREA OF EACH SHEET.

2. (a) Each sheet of the map shall cover an area 4 degrees in latitude by 6 degrees in longitude.

(b) North of latitude 60° N., and south of latitude 60° S., it shall be permissible to join two or more adjoining sheets of the same zone so that the combined sheet covers 12, 18 degrees, etc., of longitude.

LIMIT AND NUMBER OF SHEETS.

3. (a) The limiting meridians of the sheets shall be at successive intervals, reckoning from Greenwich, of 6 degrees; and the limiting parallels, reckoning from the Equator, shall be at successive intervals of 4 degrees.

(b) Each sheet of the map shall bear an international number, such as:—North B. 12.

The zones, extending from the Equator on each side to 88° latitude, are given letters from A to V preceded by the words North or South. The Polar areas are lettered Z.

The sectors, from longitude 180 E. or W. of Greenwich, are given numbers from 1 to 60, increasing in an easterly direction.

(c) Each sheet shall, in addition, bear the name of the locality or most important geographical feature on the territory represented, and also the geographical co-ordinates of its central point.

(d) Each sheet shall show a small index diagram, giving the names and numbers of the eight surrounding sheets.

DEGREE LINES.

4. Each degree line shall be drawn right across the sheet.

PROJECTION.

5. (a) It is necessary that the projection should fulfil the following conditions:—

(1) The meridians should be straight lines.

(2) The parallels should be arcs of circles of which the centres should lie on the prolongation of the central meridian.

(b) In view of the fact that on the scale proposed several suitable

projections differ but little from each other, and that the contraction and expansion of the paper on which the map is printed affect all lengths on the map, and prevent it from being in fact exactly either orthomorphic or equivalent, it is not necessary to lay great stress upon the selection of a projection which has the best properties as to conformity or equivalence. It is therefore agreed to select a projection which can be easily constructed, and which permits every sheet to fit exactly together with each of the four sheets adjoining each of its four sides. A modified polyconic projection, with the meridians as straight lines, satisfies these two conditions.

(c) The projection shall thus be constructed:—Each sheet shall be plotted independently on its central meridian. The central meridian shall be a straight line marked off in degrees. Through the points so marked circles are drawn to represent the parallels. The centres of the circles are situated on the prolongation of the central meridian. The radius of any circle $= V \cot \lambda$, where V is the normal terminated by the minor axis, and λ is the latitude of the parallel represented. Along the limiting parallels, *i.e.*, along the circles forming the north and south edges of the sheet, the degrees of longitude are marked off in their true lengths to scale. Corresponding points on the limiting parallels are joined by straight lines; these straight lines represent the meridians. The meridians which are true to scale are those which are 2 degrees to the east and west of the central meridian respectively. The actual length of the central meridian is the true length to scale, minus the small correction which is necessary to effect this, and which is shown in a special table.

HYPSEMETRIC COLOURS AND CONTOURS.

6. (a) The map shall be a hypsometric map, *i.e.*, the successive altitudes shall be indicated by a system of colour tints.

There may, however, be published other editions without altitude tints, and these may be completed by tints, or by additions required for other purposes.

(b) Normally contours shall be drawn at vertical intervals of 100 metres reckoning from sea-level. But in very hilly districts the contours may be at larger vertical intervals, provided that they are spaced at 200, 500, or 1000 metre intervals. In very flat country additional contours may be inserted provided that they are spaced at 10, 20, or 50 metre intervals.

(c) Minor features of importance, which would not be shown by the contouring, may be represented by shading, excluding hachuring, and in that case the method of lighting which is the most effective for the region will be selected.

(d) In parts where the country is not sufficiently surveyed to enable the contours to be drawn, the terrain shall be shown by broken contours or form lines.

(e) The form of the bed of the sea or of a lake shall be shown by blue contours, the vertical intervals being normally 100 metres, but intervals of 10, 20, or 50 metres may be used. The datum level in each case is to be the mean surface level of the sea, or of the lake for a given date.

LETTERING.

7. (a) The lettering shall be in varieties of the Latin characters.

(b) In those cases in which the Latin characters are not in use in the country in which the sheets are produced, a supplementary national edition may be published.

(c) A distinction shall be made between the lettering applied to Hydrography and that applied to other features. The former shall be in sloping characters, the latter in upright characters, except as provided for names applied to routes of communication.

(d) The attached classification of and general types of standard lettering are approved for use on the International 1:1,000,000 map. The question of gauge has been left entirely to the discretion of the cartographer. It is understood that the size of lettering will vary with the relative importance of the names.

(e) All figures denoting heights shall be upright. Figures denoting depths shall be sloping.

(f) The lettering used for scales, sub-titles, and other explanatory matter appearing outside the sheet-lines of the map shall be in upright Roman capitals and lower case.

SPELLING AND TRANSLITERATION OF NAMES.

8. (a) The spelling of every place-name in an independent country, or self-governing dominion, using the Latin alphabet, shall be that adopted by the country or dominion.

(b) The spelling of every place-name in a colony, protectorate, or possession shall be that adopted by the country governing the colony, protectorate, or possession, if that country uses the Latin alphabet, or publishes other maps in which the place-names are printed in the Latin alphabet.

(c) In the case in which certain important localities have also, in addition to the official name, another customary name notably different, the latter shall be printed on the map, in small characters, underneath the official name.

(d) An explanatory legend shall be printed to show, with reference to the names on the sheet, the Latin letters which are necessary to represent the same sounds in other languages employed in the International map.

(e) It is suggested that the Governments of those European or extra-European countries which do not use the Latin alphabet, should publish an authorized system of transliteration.

(f) In the case of Chinese place-names, that transliteration shall be adopted which is used by the Chinese post and customs services.

The same rule shall apply to other countries in which similar conditions obtain.

COLOURS OF DETAIL.

9. (a) Hydrographic features, including glaciers, shall be in blue. Water shall be shown by a uniform tint of blue wash, and not by water-lining. A distinction shall be made between perennial and non-perennial streams.

(b) Contours shall be in brown.

(c) Roads shall be in red.

(d) Railways shall be in black.

(e) The name of feature shall be printed in the same colour as the conventional sign of the feature itself, with the exception of mountain names, which shall be in black.

(f) The hypsometric tints shall be those of the attached colour scheme.

(g) Country lying below the mean level of the sea shall be shown by a special tint of dark green.

SCALES.

10. (a) A scale of kilometres shall be drawn on each sheet.

(b) An additional scale of miles, or other national unit, may be drawn if required.

HEIGHTS.

11. (a) The heights above mean sea-level shall be shown in metres.

(b) The values in feet, or other national unit, may be added, to the nearest unit, if desired.

(c) The heights of the mean levels of the surfaces of lakes and inland seas above mean sea-level shall be given.

(d) The datum level both for heights and depths shall be the mean sea-level, deduced in each country from tidal observations on its own coasts.

CONVENTIONAL SIGNS.

12. (a) In the case of rivers, rapids and other obstructions to navigation are, as far as possible, to be indicated.

(b) Roads and tracks should be divided into two classes, those which are suitable for wheeled traffic, and those which are not.

(c) It is agreed that where it is decided to represent features provided for in the attached reference they shall be shown by means of the conventional signs given here. In the case of details not provided for below, other signs may be used at the discretion of each Government.

(d) For convenience of reference and indexing, the inner margins of each sheet shall be provided with Arabic letters from top to

bottom of each side margin, and with Roman numerals from left to right along both the upper and lower margins. Two of each (letters or numbers) shall appear within each degree of latitude or longitude respectively.

(e) At the foot of each sheet shall be printed a Reference, explaining all the conventional signs used in that sheet.

(f) Each sheet shall bear a list of the principal sources of information from which it is constructed.

EXCHANGE OF MATERIAL.

13. In the case in which a sheet covers an area belonging to several neighbouring countries, it is desirable that the Government producing the map should consult the Governments of the other countries on the subject of the material available, especially as regards the nomenclature.

TWENTY-FIFTH ANNIVERSARY OF THE FOUNDATION OF THE SOCIETY.

*Report of the Proceedings at the Banquet held to celebrate the
Anniversary, and in honour of Sir Ernest Shackleton.**

A BANQUET was held in celebration of the 25th anniversary of the foundation of the Society, and in honour of Sir Ernest Shackleton, at the Midland Hotel, on Saturday, November 6th, 1909, at 7-15 p.m.

The Chairman of the Council, Mr. Harry Nuttall, M.P., F.R.G.S., presided, and in addition to the distinguished guest there were present, among others,

Mr. B. Abel, Mr. W. S. Ascoli, F.R.G.S., Mr. and Mrs. Wm. Ashworth, Mr. W. E. Ashworth, Mr. H. A. Baerlein, Mr. M. Baerlein, Mr. J. E. Balmer, F.R.G.S., Mr. G. W. Bardsley, Mr. A. Barningham, Mrs. J. Barningham, Councillor C. Behrens (Lord Mayor Elect), Mr. Gustav Behrens, J.P., Mr. C. H. Bellamy, F.R.G.S., Mr. J. Blackhall, Mr. G. I. Blake, Mr. and Mrs. Philip Bles, Mrs. A. de Bolivar, Mr. E. J. Broadfield, J.P., Mr. G. F. Burditt, J.P., Mr. Councillor Walter Butterworth, Mr. C. A. Clarke, Miss A. Collinge, Mr. Arthur Crompton, Miss E. Crowther, Mr. F. Bettley Cooke, Mr. and Mrs. J. M. Dale, Mr. and Mrs. H. E. David, Mr. and Mrs. C. J. Davies, Mr. T. Kyle Dawson, Mr. T. Dehn, Mr. and Mrs. M. Ellinger, Rt. Hon. Alfred Emmott, M.P., Mr. E. Roose Evans, Mr. and Mrs. Hy. Forsyth, Mr. and Mrs. M. A. Gibson, Mr. G. Ginger, Mr. T. Gregory, J.P., Mr. J. G. Groves, J.P., and Mrs. Groves., Mr. W. P. Groves, Alderman T. Hassall, J.P., Mr. R. E. Hailwood, Mr. H. C. Handcock, Mr. A. Gordon Harvey, M.P., Mr. and Mrs. John Helm, Mr. W. R. Hesketh, Mr. John Houghton, Mr. and Mrs. J. Howard Hall, Major Church Howe (American Consul), Mr. and Mrs. E. Hoyle, Miss Hopwood, Mr. W. M. Johnson, Mr. M. Kalisch, Mr. R. Kalisch, Mr. Hy. Kirkpatrick, J.P., Mr. and Mrs. N. Kolp, Mr. Julius Kullmann and Miss Kullmann, Mr. E. H. Langdon, B.A., Mr. Walter Lees, Mr. and Mrs. James

*A photograph was taken during the proceedings, and the Society is greatly indebted to the Editor of the "Manchester Guardian" for kindly presenting an enlarged copy of the photograph which has been framed and hung in the Society's Rooms. The photograph was reproduced in the "Guardian" of November 8th, 1909.

Leigh, Mr. J. Pinto Leite (Portuguese Vice-Consul), and Mrs. Pinto Leite, Miss Ada Lemon, Mr. and Mrs. D. A. Little, Mr. Wm. Lowe, Mr. W. Lloyd, Mr. John McFarlane, M.A., M.Com., Rev. J. E. McRae, M.A., Mr. G. C. Mandleberg, J.P., and Mrs. Mandleberg, Mr. S. L. Mandleberg, J.P., and Mrs. Mandleberg, Mr. and Mrs. Charles Marx, Mr. E. W. Mellor, J.P., and Mrs. Mellor, Mr. F. Miller, Mr. E. Miller, Mr. W. Milligan, M.B., and Mrs. Milligan, Mr. and Mrs. Jesse Neild, Mr. and Mrs. G. D. Newton, Mr. and Mrs. Joe Nicholson, Mrs. Harry Nuttall, Mr. W. Nuttall, Mr. N. Notman, M.A., Mr. S. Oppenheim, J.P., and Mrs. Oppenheim, Mr. R. Cobden Phillips, Mr. Alfred Pickford, Mr. and Mrs. R. H. Prestwich, Mr. H. L. Price, F.S.A.A., Dr. and Mrs. Alfred Ree, Mr. J. Howard Reed, F.R.G.S., and Mrs. Reed, Mr. and Mrs. J. Stephenson Reid, Mr. and Mrs. R. H. Reynolds, Mr. and Mrs. Gustav Reiss, Mr. and Mrs. Hans Renold, Mr. Thomas Rheeder (Secretary, Leeds and Yorkshire Geographical Society), and Mrs. Rheeder, Mr. W. Robinow, Mr. and Mrs. H. L. Rothband, Professor E. Rutherford, M.A., D.Sc., and Mrs. Rutherford, Mr. and Mrs. W. Ruttenau, Miss Rothband, Mr. Rothband, Jun., The Rt. Rev. the Bishop of Salford, Their Worships the Mayor and the Mayoress of Salford, Mr. E. Schofield, J.P., and Mrs. Schofield, Mr. C. H. Scott, J.P., Mr. and Mrs. Ph. Segner, Miss Ph. Sheavyn, M.A., Mr. and Mrs. A. V. Sharratt, Mr. Geo. Simpson (Argentine Vice-Consul), Mr. Salis Simon (Swedish Consul), Mr. and Mrs. Alex. C. C. Somers, Mr. and Mrs. Harry Sowerbutts, Mr. and Mrs. T. W. Sowerbutts, Mr. E. F. Steinthal, Miss Steinthal, Mr. and Mrs. S. Sternberg, Mr. and Mrs. John Stevenson, Mr. R. B. Stoker, F.R.G.S., and Mrs. Stoker, Mr. and Mrs. W. T. Stubbs, Mr. Walter Taylor, Miss Taylor, Mr. and Mrs. Hy. Terry, Mr. Geo. Thomas, Mr. and Mrs. Thomas, Mr. and Mrs. Robert Walmsley, Mr. I. C. Waterhouse, Mr. W. H. Ward, The Rt. Rev. Bishop Welldon, Dean of Manchester, Mr. and Mrs. W. Welsh, Mr. G. Wihl, Mr. Joseph Woolfenden, Mr. R. S. H. Woolfenden, Mr. Hermann Woolley, F.R.G.S., Mr. F. Zimmermann, F.R.G.S., and Mrs. Zimmermann, Mr. N. and Miss Zimmermann.

The loyal toasts were proposed from the chair, and duly honoured, special mention being made of the President of the Society, His Royal Highness the Prince of Wales.

The Chairman then proposed the toast of Lieut. Shackleton, and said:—I have much pleasure in proposing the toast of

the evening. I am sure we all agree that it is with the greatest pleasure and satisfaction that we have again the opportunity of meeting Lieut. Shackleton—a national hero. We hailed with joy the news that he had arrived at New Zealand, and we read with wonder the cabled accounts of his great achievements. Last night, by means of fine pictures, he took us on a journey through the ice-bound regions of the far South under circumstances which could not fail to bring to our minds a striking comparison of the conditions under which we listened to him, and the conditions under which he had been living not many months before. We wonder still at the prodigious feat and at the ever-conquering advance of man over the forces of nature, and by such a man as our guest this evening. The journey of 7,750 statute miles out to the South Pole and home again included a record sledge journey, and for the first time this, a Polar expedition, did not lose a single man. The severity of the journey and the trials which this expedition underwent may be judged by the fact that for days together Lieut. Shackleton marched with his socks soaked in blood, his heels having been burst by frost bite. This morning Lieut. Shackleton called on our respected ex-Chairman, the Rev. S. A. Steinthal, and I may tell you he found him very well, full of vigour and interest. He had those two large volumes of Lieut. Shackleton's journey on the table, looking them through. He asked many questions about them, and his only regret is that, owing to advanced age, he cannot be with us to-night. I want to say a word, before I sit down, on the scientific work of the expedition, and perhaps that is more appropriate here than in a general assembly in the Free Trade Hall. The book of course has only been out a few days. It came out earlier than I expected, and I find that there are no less than 179 pages of appendices upon the scientific work, and in the hurried glance I took of the book I find that there is an appendix on Optics, so that the scientific aspect of the book, and the complete work generally done by the expedition, seem to be of a very extensive character indeed. I learn that there will be no less than forty memoirs on the scientific work and results of the expedition ultimately. These different subjects will be dealt with by scientific men from various parts of the world, so that from what I have told you you will realise that this expedition (as I think everyone who is familiar with the story of it from the beginning, and who has followed it through from point to point,

as most of you have done, both members of the Geographical Society in London and here will agree), not only as regards the courage and the strong human force in the way of physical power, mental and moral courage and firmness, but also as regards its scientific results, is, as I believe it to be myself, the greatest expedition that has ever set out and returned in the history of the world. We are especially fortunate on the occasion of our banquet to Lieut. Shackleton in being able to combine with it the celebration of the 25th anniversary of the foundation of our Society. I may assure Lieut. Shackleton that it is with the greatest pleasure, satisfaction and triumph that we are able to place his name and his visit to Manchester as a Lecturer, with recollections of all he has done, on the records of the Journal of the Manchester Geographical Society. It is with the greatest pleasure that I ask you to drink to the health, long life and prosperity of our distinguished guest, Lieut. Shackleton.

Lieut. Shackleton said: After the very kind remarks that Mr. Nuttall has made I find it a rather difficult thing to make any reply suitable to the kindness that has been expressed. I may remind you that it was the only South Polar expedition that has returned from wintering without loss of life, and we have added to the world a good many mountains and a good many miles of barren land that had not been known before. But it was a British expedition, and it bears out what Mark Twain said, when asked where the English people were mentioned in the Bible, and he answered: "It is the place where it says 'the meek shall inherit the earth.'" That particular part of the earth will never lead to any litigation, and will not come under an Unrecoverable Minerals Bill or anything like that, but still it is part of the world, and it was our particular work to try and find out what lay there. It has been said that we know more about the poles of the planet Mars than we do about those of our own earth, and though in another part of the world we know more about certain poles, we did not reach the South Pole. That feat still remains to be done, and Captain Scott, next year, is going to try to do that other 97 miles. No one knows better than Captain Scott that it is hard work to go up that glacier, and that it requires, first of all, at this end of the world, funds. That is a thing that the British people, I am sure, will be ready to pay and help him who has to go and do the work. If you are hindered by want of funds, and I speak from experience,

you may not do all you set out to do, and it is up to this country to help him when he goes to the South. On this side there will have to be no need for funds so that the work may be carried forward, and, finally, that the British Flag may fly in the place where, by tradition and years of exploration, it is due for it to fly. I went to call to-day on Mr. Steinthal, and I found him, as your Chairman has said, active, keen of mind, and interested in the expedition; and it is also to me a regret that he is not here to-night, because I have known him by correspondence for many years, and know that no one in Manchester takes a greater interest in Polar or any other explorations than he has done. He sits at home in body, but is here in spirit.

No doubt in my wanderings in the civilized world during the next few months I shall have other experiences I can relate. But there always remains a future, and the immediate future now is with Capt. Scott. But every one of us who has once gone out into those regions always feels that "call of the wild" that has been spoken of so much. It is a little thing, but it is one of those little things you cannot express in words. I only knew one man who could express it really, and he was a young Canadian who has written various poems on the wild North-West. My own words are inadequate to describe what it means to go down to those regions. He says:—

"The trails of the world be countless, and most of the trails be tried,
 You tread on the heels of the many till you come where the ways
 divide;
 And one lies safe in the sunlight, and the other is dreary and wan,
 Yet you look aslant at the lone trail, and the lone trail lures you on.
 And somehow you're sick of the highway, with its noise and its easy
 needs,
 And you seek the risk of the by-way, and you reck not where it
 leads,
 And sometimes it leads to the desert, and the tongue swells out of
 the mouth,
 And you stagger blind to the mirage, to die in the mocking drouth.
 And sometimes it leads to the mountain, to the light of the lone
 camp fire,
 And you gnaw your belt in the anguish of hunger-goaded desire.
 And sometimes it leads to the Southland, to the swamp where the
 orchid glows,
 And you rave to your grave with the fever, and they rob the corpse
 of its clothes,
 And sometimes it leads to the Northland, and the scurvy softens
 your bones,

And your flesh dints in like putty, and you spit out your teeth like stones.

And sometimes it leads to a coral reef in the wash of a weedy sea,
And you sit and stare at the empty glare where the gulls wait greedily.

And sometimes it leads to an Arctic trail, and the snows where your torn feet freeze,

And you whittle away the useless clay, and crawl on your hands and knees.

Often it leads to the dead pit; always it leads to pain."

In these words the poet has really hit off what it means.

I want to add one more word before I sit down; that is, that I went out on this little expedition with fifteen good comrades, who worked with me right through, and to whom, I take it, this banquet, as regards my part of it, is given, though they are scattered now, as much as it is to myself. When I returned I was received by the people of this country with sympathy, and by none with more than by the Government which granted £20,000 towards a great part of the expenses of the work we have tried to do for this country. All the expedition will always be grateful for the recognition we received, and never more so than for the great kindness, sympathy and cordial feeling of comradeship which was displayed. We felt there was a desire to show that you appreciated the work which we did, and this was shown in this great city last night and in this fine gathering to-night, which is a great honour for any man. I thank you heartily for the kindness I have received on behalf of my expedition to-night.

The Right Rev. Bishop Welldon, Dean of Manchester, proposed the toast of the "Manchester Geographical Society," and said: It is a great honour that is done me in that I am asked to propose this toast, and I feel the honour more as I have not been able to be present during the dinner. I think I shall be forgiven if I say that I have been attending the funeral of my old headmaster, the Provost of Eton. I see that one of the newspapers states that I stand in the relation of headmaster to the distinguished guest of this evening. That is not exactly the case, as I think that Lieut. Shackleton joined the great college of which I was once master about the time when I left it. The loss was mine, not, I am sure, the Lieutenant's, but I have been sometimes tempted to think, with the pardonable vanity of a headmaster, that if he had been a

pupil of mine, even for a short time, he would probably have reached the South Pole.

I am asked to propose the toast of the Manchester Geographical Society. The Chairman has already reminded you that the Society is now 25 years old, and it may be worth while to mention the names of the founders of the Society, they have all now, alas! passed away: Cardinal Vaughan, then Bishop of Salford, Mr. John Slagg, Mr. J. F. Hutton and Mr. Eli Sowerbutts, who, I am glad to say, has not left the Society without a representative of his name. Of the members of the first Council of the Society there still remain Sir W. H. Houldsworth, the Vice-Chancellor of the University, Professor T. H. Core, Professor W. Boyd Dawkins, the present Bishop of Salford, whom it is a pleasure to welcome here to-night, Sir Wm. Mather and Mr. F. Zimmern; and I ought not, I think, to forget to add that Mr. Theodore Gregory has for twenty-five years been Honorary Auditor of the Society. The foundation of the Society took place at a meeting held in the Mayor's Parlour on the 15th October, 1884, and it is interesting to notice that that meeting was followed after a very few days by a lecture given by Mr. Henry M. Stanley, afterwards Sir H. M. Stanley. His subject was the "Importance of the Scientific Study of Geography," with special reference to Central Africa and the Congo Basin. Since that time the Manchester Geographical Society has done good work in many directions. Of all the cities of the Empire, Manchester is, or ought to be, interested in the study of geography. Our commerce reaches out to the furthest regions of the world; in fact, I believe if it were not for Manchester half the world would go naked. I do not feel ashamed of confessing that when Lieut. Shackleton exhibited some photos of the penguins of the Southern regions it seemed to me that even those penguins were clothed in some goods which might well have been manufactured not far from this hall. Apart from the commercial aspect of geography, there is the scientific interest that appeals so strongly to the citizens of Manchester for, perhaps, next to mankind himself, there is no study so appropriate to mankind as that of the world in which men live. For this reason, and with these few words, I commend to you the toast of the Manchester Geographical Society, and it is an especial pleasure to connect that toast with the names of Mr. F. Zimmern, the Honorary Secretary for twenty-five years, who

has now become Vice-Chairman of the Society, and Mr. J. Howard Reed, the present Honorary Secretary. These are men who have done much of interest for geography and have done honour to the Geographical Society, and the Society delights in return to do honour to them.

Mr. F. Zimmern, F.R.G.S., said: I must first express cordial thanks for the very kind words which fell from our friend the Dean with regard to the Manchester Geographical Society and wishes for its future prosperity. In the name of the Council and my colleagues I thank you very heartily for those kind expressions and for the warm way in which you have received the toast. I promise you that we will continue to do the very best we can for the advancement of geographical knowledge. The name of Eli Sowerbutts has been mentioned, and I must not again dwell upon it; but no gathering of the Society can ever take place without that name being mentioned, and mentioned with feelings of gratitude, because whatever we may have done, he, and he alone, is the real founder of the Society, and his spirit is amongst us to-day and encourages us to do what we are doing. The Dean was kind enough to mention my own silver wedding. Twenty-five years ago I engaged with the young Geographical Society, and it has been a very happy union for me. Of course we had a four-and-sixpenny cottage, and the food was sometimes meagre, and we had a general servant, as a small household has, to begin with, but, aided by good friends, like Lieut. Shackleton, and we were surrounded by good friends, we lived a happy life for twenty-five years, and we hope to live a good many years longer if the Manchester public and the Salford public will support us, as they have hitherto done. This union also was not without offspring; we had children. The Victorians, for instance, a body of young men who go about the neighbourhood of Manchester and give lectures to the people, and address very large audiences. Lieut. Shackleton last night humorously described meetings he had himself known where there were only three or four present. Our own lectures were attended by meagre audiences, but they increased in time, and are now well attended. I do not appeal for new members because I want fresh members, though we are very glad to have them. It is because I feel every time I speak about it that really it is scarcely possible to spend a more pleasant, profitable or instructive evening than when you come down to us and

listen every Tuesday evening to the lectures which, through the kindness of a great many of our friends, we are able to give you. We have ladies and gentlemen from all over the world who come and give us, in a short time, the best they can give. You will have noticed that there is no toast for ladies to-night. The explanation is that in our Society we make no distinction of sex. We look upon the ladies as our comrades, interested in the same science in which we are interested. I am particularly pleased that such a large number of ladies have honoured us to-night. A great many of them have been our best lecturers.

Mr. J. Howard Reed, F.R.G.S., in replying to the toast, said: In thanking the ladies and gentlemen present I wish to call attention to the record of work which has been done in the geographical world during the twenty-five years our Society has been in existence. We may say that during this period knowledge of the earth's surface has immensely extended. The study of geography during that time has also enormously increased, the teaching of geography during the same period has been improved in every way, and we may say that in these days geography has at last reached the popular position which it ought to occupy. I think this important gathering here to-night, as well as the still larger one last night, is evidence of that fact. Knowledge of the earth's surface has extended in an immense degree during the twenty-five years of our existence. A study of the maps of to-day in comparison with those of twenty-five years ago will show that at a glance. Polar research has played its part, as we are reminded by the words that fell from the lips of our guest this evening. The world's knowledge of Asia has also extended, while in the Continent of Africa, a positive revolution has been worked. Previous to the existence of our Society the only organised effort in the way of geographical study was that carried on for a generation by the great Royal Geographical Society in London, world-wide in its influence, and of which those members of it, who are present to-night, are proud to be Fellows. Since our Society was started twenty-five years ago an outbreak of geographical societies has taken place. About the same time, or shortly afterwards, the Royal Geographical Society of Scotland was established, and then the Tyneside Society, as well as Societies at Liverpool, Southampton and Leeds; all these Societies are doing extremely good and useful work. Now I learn from our good friend Mr. Bellamy that the spirit of geography is moving

in the eastern city of Hull, and they are already making enquiries and getting support with a view to the establishment of such a Society in that city. It appears to me that there is no finer field, no more useful centre for geographical work than in the city of Hull and in the surrounding districts. Apart from the Societies to which I have referred there has been a great improvement in the position of geography as an educational subject. Oxford, Cambridge and Edinburgh Universities have all now their lecturers in geography, and I believe that other universities, as well as our own, are in the same position; and I think that our Society may claim to having had some considerable influence in this development. It may be remembered by you that Mr. Yule Oldham was the first lecturer in geography in our Manchester University, and it was largely through the instrumentality of this Society that that lectureship was established. Mr. Yule Oldham passed to Cambridge, and Dr. Herbertson took his place. He in turn went on to Oxford, where he has since been doing remarkably good work. Then we have still with us Mr. Macfarlane, the present lecturer, a member of our Council and of the Executive Committee. In addition to this influence of geography in the Universities, we may say that geography has become a far more important subject in the secondary schools than it used to be in the past. It is better taught to-day than ever it was before; maps and text-books for teaching purposes are very much improved. Then, coming to the popular side of our science, we may say that geography has now reached a position which was quite undreamed of far less than twenty-five years ago. Every literary society to-day, every organisation of any kind in townships or suburban districts for the purpose of bringing people together for a mutual desire of improvement, puts geography very largely in the front of its programme in the instructive lectures and addresses which are given to its members. Photography has also developed during that time, and has become the handmaid of geography, as we saw so admirably illustrated by Lieut. Shackleton in the brilliant address which he gave us in the Free Trade Hall last night.

I may also say that we look back with satisfaction to our twenty-five years' work. It has at times been difficult to keep the geographical chariot going as we should have liked, but, in spite of troublous circumstances, we have never long suffered more than scarcity of funds. We have had a shortage of

members at times, and at times deaths and resignations among our ranks have been larger than the accessions of new recruits, but now, although we shall never have too many members, we have more than ever before in the history of the Society. The attendances at our meetings—and this has been alluded to by Mr. Zimmern—is now so large that we always have crowded houses, and more than once we have not been able to find accommodation for those who desired to be present, and some have been turned away. The Council, at the end of last winter, were so seriously concerned about this point that they took counsel with the Board of the Geographical Building Company to see if something could be done to enlarge the accommodation in our lecture hall. The Board of the Building Committee, who are all prominent members of the Geographical Society themselves, were only too anxious to do anything they could to extend the usefulness of the Society as a whole, and they added an excellent gallery to the hall, giving seating accommodation for eighty additional people. Notwithstanding that we are still crowded each week. I think we may claim that the high standard of the lectures we bring before our members is as well maintained during the present session as it has been in past sessions. In the name of the Council and of the Executive Committee, I beg to thank you most cordially for the support which you have given us, and for the hearty manner it has been responded to by those present. We intend, those of us who have anything to do with organising the work, to do all we can to maintain the best traditions of the Society in the future that is before us. The great work of the Society really lies in the future. In the past we have been struggling through clouds, but they have always had a silver lining, dark though they may sometimes have appeared. We have reached the silver to-day in this brilliant climax of our silver jubilee. We have now to work for that future. The duty for members and officers alike is to still work strenuously and push hopefully forward. If this is done we shall in due time reach the effulgence of golden glory which I believe the future has in store for this Society.

The Right Rev. the Bishop of Salford said: The toast I have the honour to submit is that of the City of Manchester and the Royal Borough of Salford. I hope our guest this evening, Lieut. Shackleton, will not be shocked that a citizen, a native

of Manchester, and a Burgess of the Royal Borough of Salford, should rise to speak in terms of praise of his own city and borough, but after all perhaps I may justify the pride of the man who says, "I am a citizen of no mean city." For that reason, or being both a Manchester man and a Salford man, I may be allowed to propose the toast. I think that perhaps there is another reason why I may not inappropriately have the honour, and it is that I am the successor of the man who first, I believe, conceived the idea of this Society, I mean my illustrious predecessor Dr. Vaughan, Bishop of Salford. If you look at the first page of the first number of our *Geographical Journal* you will find the inaugural address of Mr. Hutton, who presided over our first meeting, in which he gives a little bit of history, of which I quote the following sentence. He was speaking at the beginning of 1885, and he said: "Just five years ago"—five years back therefore before the actual inception of this Society,—"an attempt was made to found a Geographical Society in Manchester. The idea was first originated by the Bishop of Salford." Our first attempt was not a success, but four years later the Society was formally inaugurated, and the great African explorer, Stanley, gave us the first address, just as Lieut. Shackleton has given us the closing address of the quarter of a century. We may ask what is the exact connection between the Society and the city and borough? We may say it is this, that this Society was essentially a Manchester Society, because its aims were not quite the same as those of the Royal Geographical Society, which in those days was the only Geographical Society in these countries. Its aims from the very beginning, the aims of my illustrious predecessor, Dr. Vaughan, and those associated with him, were of a somewhat more practical nature than was at all possible with a great scientific society like that of the Royal Geographical Society. It is true our aim has always been, and always ought to be, the promotion of geographical science as a science, but it was not limited to that in the minds of those who gathered round it in the first early days. Its aims were essentially practical, to benefit the community in which we live by making geography subserve not only the expansion of science but also the needs and wants of the immense industrial community in which we live. It was to be primarily a commercial Geographical Society. I know that was the idea in the mind of Dr. Vaughan and of those associated with him, that

a Society like this ought to help the trade and industry of this great community and country by making better known those various markets throughout the world which we at present need

a pressing necessity if Lancashire industry was to continue to prosper. It was that thoroughly practical aim—though a certain amount of cold water was thrown upon the project which inspired those pioneers of whom so few are left amongst us. It was to benefit the city and borough and the neighbouring districts in which we lived. The idea was, the better we know the world, the better we got to know the various populations which inhabit our globe, their characteristics, their needs or wants the better we should be able to extend our markets, and in a more intelligent way than we had been doing. We had some encouragements and some discouragements at the beginning. There were those merchants who gave us discouragements. They said it was not a very desirable thing to throw open the world to foreign countries. They seemed to think it might interfere with us and with our monopoly in certain markets. I hope all those ideas have long since passed away. I think that we are all convinced that the more knowledge we have of foreign countries and foreign people and their characteristics the more benefit will accrue to the populations that have the advantage, and through them all those individual firms whose very life consists in their knowledge of and in their communications with those foreign countries of that knowledge. Have we been able to any extent to fulfil that promise? I think we have, and though we were not able to put our finger upon any very definite result, I think one must feel that a great deal of the developments of Lancashire trade has been owing to a large extent to the knowledge that we have gained in this part of Lancashire of various parts of the globe and of their various populations. And if this is so, and I take it to be the case, then this Society is performing the work for which it was originally intended. There were various other objects in view, and some of them, I think, certainly have been realised. Mr. Reed remarked that we were doing what we could to promote the teaching of geography in all parts of our education, and I certainly think that, through the efforts of our Society, very largely at the beginning, seconded by the Chamber of Commerce, we have done very much to encourage the study of geography both in the Universities and in the secondary schools of the country. With regard to the municipalities, what we

have done is perhaps not of so direct a character. It is true that from the beginning we had upon our Council the Mayor, and afterwards the Lord Mayor, of Manchester and the Mayor of Salford. In these countries the municipalities, I believe, are not able to do what they do in so many foreign countries. I believe had we been in one of those countries our Municipality long ago would have erected a fine geographical hall with its library, museum and lecture hall. But that is not the custom in this country, and I suppose we could not hope for it, so we have done our best, and, as you know, the Society itself has done what no other society has done, it has erected a house for itself, a lecture hall and library, an example, I think, to many other societies round us. I sometimes wonder whether in the future municipalities will ever be able to do more than they have done in the past in some of those directions. Sometimes I have wondered whether, when the time comes, when the important site in the centre of the town we are still talking about and have not yet made up our minds what to do with, will, as I hope, be covered by a grand Manchester Institute, in which we shall see a library and, let us hope, a Manchester historical museum. I often wonder whether in that grand hall or institute which I think is going to rise after all, though it may be a long time, yet I hope it will come, we may not have an adequate geographical museum which shall be worthy of the city of Manchester. May we not also have such a large house for all our literary and scientific societies that they may no longer be in difficulties about finding accommodation for those who flock to lectures as they are doing at the present day in our Geographical Society? But that is a dream of the future. I hope our municipal fathers, when they are taking into consideration the future development of this great city, and one cannot see an end to this development, will have thoughts of this kind, and that we may see them realised in some scheme such as I have indicated. I believe it will be worthy of the site, and that in the long run it will be an endowment to this city of incalculable value, and that when twenty-five years have gone again, and when the young people among us live to see the golden jubilee of the Manchester Geographical Society, it will be twice the size of the present Society. I certainly hope that they will have seen the realisation of some such scheme as I have ventured to suggest. In order that that may be the case it is our wish and hope that our

municipal bodies may continue to develop broad and noble ideas for the welfare of those whom they rule and govern. We shall help them to do that, I am sure, by doing all we can to render our municipal councils worthy of the great task which is upon them, a task worthy of their great parliaments, for such they have now become in these days. I am sure I have you all with me in wishing all success and prosperity to our municipal bodies, and I have great pleasure in asking you to drink prosperity to our city and borough, uniting with the toast the names of his Worship the Mayor of Salford and the Lord Mayor Elect of Manchester who have honoured us with their presence.

The Mayor of Salford (Alderman T. H. Jenkins), in responding to the toast, said: I followed with very deep interest the speeches that have been made to-night, and naturally more especially that by the Bishop of Salford in proposing the toast of the Corporations of Manchester and Salford. But I am bound to confess that his Lordship has given me nothing upon which I can comment. He has spoken truly, very highly and still more interestingly of geographical subjects, but he has given me no point upon which I can lay hand to reply on behalf of our municipalities. With regard to them, I rather fear it would be a question from which he naturally would shrink, and I am afraid if I were to describe to you the duties of the municipality or its members you would shrink from me also. I will leave that to our worthy friend the Lord Mayor Elect, if he likes, to give you his observations on lighting, scavenging and health, and I believe it would do us good after so much geography. But I am like the setting sun, I have had my time, and I am going to leave the Lord Mayor's successor to say what he pleases and try to ingratiate himself in your favour. Let me first, however, thank your Council for the honour you have done Salford in inviting me, as its representative, to come here to-night. One thing adds pleasure to our enjoyment, and that is the presence of ladies. The Geographical Society has a great amount of talent, and indeed I know of no other society that could give us better evidence of it than you have given us to-night, for we have had some of the best speeches that I think most of us have ever heard. I thank you for the honour you have done to Salford by inviting me to this interesting and agreeable gathering.

The Lord Mayor Elect of Manchester (Mr. Councillor Charles Behrens), in reply, said: I take the very kind reception which

you have given to me as an indication that you approve of the unanimous choice of my colleagues in the City Council. I have still three days in which to repent, but I fear that I shall have to undertake the duties which have been imposed upon me. I rise this evening, in the absence of our worthy Lord Mayor and his deputy, who are unavoidably away, to reply to the toast. It gives me very great pleasure to do so, and to thank Bishop Casartelli for his reference to the first magistrates of Manchester and Salford. In Manchester we have had great travellers, and we have always given them a hearty welcome, but I do not think that we have ever had a more distinguished traveller amongst us than we have here this evening. We feel very greatly the honour done to us by Lieut. Shackleton in coming among us and giving us an account of his travels.

The Rt. Hon. Alfred Emmott, M.P., proposed "The Victoria University of Manchester." He said: In regard to my toast the Dean has claimed that if Lieut. Shackleton had had the advantage of being under him he would undoubtedly have reached the South Pole. The Dean very naturally and very properly touched on the great importance of education, and I think the great exploit of our guest of the Manchester Geographical Society to-night has some bearing upon my toast. I think that some of the qualities which were so conspicuously displayed by him and by those who were with him, and to whom he has so generously and properly paid a high tribute, I think some of these qualities are not qualities which could be got by any kind of education: they are qualities which are born and not made. On the other hand, what would have been the value to the world of his brilliant exploits if they had not been accompanied by those accurate, scientific observations, some of which have already been made public to the world, and others of which have yet to see the light of day. Those accurate scientific observations can only be made by men trained in our universities. I have the honour of proposing the toast of the "University of Manchester." A great Englishman, or he would be an Englishman if he were not a Scotsman, Lord Rosebery, was speaking last night about the Glasgow University, and he said the distinctive feature of the Glasgow University was that it had for centuries been closely connected with the city of Glasgow. That cannot be said of the University of Manchester. The University of Manchester is comparatively modern, but I am perfectly certain of this, that if Manchester is going to be as successful in the

future as she has been in the past, it will be because the University of Manchester is successful in the future. The two are indissolubly bound up together, and it is a truism to say that if Manchester is not successful, the University of Manchester will not be successful in the future, and it is equally a truism to say that if the University of Manchester is not successful neither will the city of Manchester be successful. It is not merely because of the connection with science and industry, it is not merely because in the process of manufacture higher scientific knowledge is more essential from day to day, it is not merely because in the great commercial connections of Manchester a great deal of knowledge of the University type is required. Manchester is connected with the whole civilised and uncivilised world by a mere thread of cotton, but how powerful and potent a connection that is. I am not without hope, following up what the Dean said a short time ago, that Manchester may do something for the penguins in the not distant future. However that may be, I say the University of Manchester is bound up with Manchester not merely because it can provide scientific knowledge, not merely because it can provide commercial knowledge, but also because it makes a fair attempt to supply that universality of knowledge which every university is trying to supply. And in the universality of knowledge do not let us forget those humane studies without which the intellectual life of a great commercial centre like this can only be stunted. It is in that spirit that I ask you to drink with me the health of the University of Manchester. I have great pleasure in coupling with the toast the name of Professor Rutherford, one of the most brilliant scientific men of the day and a great ornament to Manchester University.

Prof. E. Rutherford, M.A., D.Sc., Ph.D., F.R.S., said: I feel it a very great honour to respond to the toast of the University of Manchester. I am a very late comer to this University, for I have only been three years here. If I may be allowed to say so, I am exceedingly proud to be connected with this University, for you all recognise that the University of Manchester, coupled with the School of Technology, is one of the most progressive of these modern Universities, of which Mr. Emmott spoke a few moments ago. I am especially pleased with the interesting, and to my mind very true, remarks which Mr. Emmott made in connection with the University. I feel it is a very great honour to the University, and, if I may say so,

to this Society, that Mr. Emmott is willing to leave his many arduous duties in the House of Commons, where he has already added much to a great reputation. This is my first visit, if I may so put it, to the Manchester Geographical Society, but I feel that it will not be my last. The University of Manchester has always taken a very active interest in the proceedings of the Geographical Society. Our Vice-Chancellor, as you have heard, was one of the original members, and I may mention that my neighbour here, Mr. Broadfield, who has taken such a great part in the development of the University, was one of the original members of the Council of the Geographical Society. As Mr. Reed mentioned, in the University geography is one of the subjects where there is a special lecturer, and we hope that the connection of the University with this Society will long live and prosper. I think that Lieut. Shackleton will agree with me that the University is exceedingly interested in his discoveries. At any rate the students of the University are interested in the discoveries, for I am perfectly sure—I think he mentioned it himself—that when there he found the nearest approach to forcing his way through the pack ice and snows encountered since leaving the Polar Sea. I am glad he escaped safely. I think also that Lieut. Shackleton has been to a large extent indebted to universities, or at any rate to some members of universities, for some of the great scientific accomplishments that his exploration has brought. You know that Professor David, of the University of Melbourne, was one of the chief scientific workmen of his expedition; and I think it will be a matter of very great interest if Lieut. Shackleton could only give us the history of how Prof. David came to be marooned in the southern seas. As you know, he started out from Australia on a pleasure trip suddenly, and no one heard anything more about it until it was found that he was left behind. Lieut. Shackleton cannot say how it happened, but he got Prof. David down in his cabin and locked him up, and when the relief ship sailed he had to do the work required. I am a native of New Zealand, and I am sure Lieut. Shackleton will agree with me that there is no country that has taken so much interest in the exploration as the country of New Zealand. I have read the papers there, and I think no one can realise the extraordinary interest which the people of that country took in this exploration. I think also that it may be possible, in later explorations of Lieut. Shackleton's, that if he would only say

that the flag of New Zealand should be hoisted in the Antarctic regions, and New Zealand allowed to govern there, he would get a much larger sum for his expedition.

In the universities we have problems possibly as important, certainly as difficult, as exploration, and I must in consequence express my personal feeling of the great service that Lieut. Shackleton and his expedition have done for science, for in that respect I think it differs very much from a number of other expeditions we have heard of lately. They had a thoroughly organised scientific staff, and we have only got to the beginning of the results of that side of the expedition. It will be years before we are able to realise and appreciate how much this expedition has done for the advance of our scientific knowledge of the Arctic regions.

The Chairman then said: I now beg to move that Lieut. Shackleton be elected one of our honorary members, and thus add the greatest distinction to our Society. I ask Mr. J. Howard Reed to second the motion.

Mr. J. Howard Reed said: It is with the greatest pleasure that I rise at your call to second this resolution. We have in the past elected Sir Henry M. Stanley, and a few months ago we welcomed Dr. Sven Hedin, and were pleased to elect him an honorary member of our Society. I think it would be absolutely wrong for us to allow Lieut. Shackleton to depart from our midst without first getting his consent to allow his name to appear in our list of honorary members. It will be an honorary membership for him and an honour for the Society to include him amongst its members.

The Chairman, in putting the resolution, said: There is no question as to the universal acceptance of that proposal, and I shall not ask whether you agree, but take it that it is accepted with the greatest enthusiasm.

Lieut. Shackleton, who was received with loud applause, said: It is very surprising to me that you should make me an honorary member of your Society, and I am very proud indeed of that honour. Before resuming my seat I would like to make one remark in reply to Professor Rutherford, who wanted to know how I got Professor David down to the South. He was very glad to stay down there in order to get away from Sydney for a bit. I wrote a letter to the Chancellor of the University, with the result that we got Professor David down there to do

work that I wanted done, and I can assure you I felt the gain of having Professor David there.

Mr. C. H. Bellamy, in proposing the toast of "Our Guests," said: My task is a very easy one, that of proposing the health of a very important part of our assembly here to-night. Reference has been made to the early history of this Society, and from its beginning it has, so far as I know, and I have been a member for a long number of years, always been freely hospitable, and has always welcomed guests to its meetings. Even to-day on its tickets of admission to its meetings it says, "admit member and friend." To-night we have been pleased to include our guests, and we hope that our feelings of kindness to them are reciprocated, so that, instead of being our guests in the future, they will be our colleagues. Reference has also been made to one of the gentlemen who is to respond to this toast. We are pleased to remember the honoured name of Mr. Broadfield, and it is due to him to a great extent that this Society was founded. We are sorry that he is not now a member. Those who are with us as guests will add also to the efficiency of the Society if they will join it as members. I am pleased that I have the honour of proposing this toast because this Society welcomes over and over again from distant parts of the world those who have distinguished themselves in research or those who had special opportunities for acquiring geographical knowledge which they impart to us at our meetings. I have looked from week to week and month to month with great satisfaction at the success which has attended your meetings and your wonderful list of lectures and lecturers in Manchester. I have very great pleasure in proposing the toast of "Our Guests," coupling the names of Mr. Gordon Harvey, M.P., and Mr. Broadfield, who has done such noble work in Manchester, and the representative of one of the youngest of Geographical Societies, the Leeds and District Society, in the person of Mr. T. Rheeder.

Mr. E. J. Broadfield said: I regret that Mr. Harvey, M.P., who was to have responded to this toast, has had to go. I will say, however, that the distinguished men and women who represent your guests to-night have one feeling in common, and that is a feeling of hearty recognition of the courage and perseverance of your chief guest. If we did not know before that Lieut. Shackleton was a brave man and an accomplished man we should have discovered it this morning at the Univer-

sity, for there we witnessed a rather remarkable enterprise in the presence of the most responsive audience he has yet had. He was called upon to undertake a work of great importance, a momentous enterprise: he was asked to prove himself a draughtsman and to present a pictorial representation of some of the intelligent natives of the regions he had recently explored. I mean the penguins of course. The Vice-Chancellor actually sent for a blackboard and a piece of chalk and asked him then and there to represent a penguin. I saw a look of stern determination upon his face, and it seemed to me I recognised the intelligence and enterprise of the man who said, "How many days will it take, and how much food have we to go on with?" when he took the pencil and drew a penguin. And then, in order to prevent posterity making a mistake, he most kindly wrote under the figure he had drawn, "This is a penguin." I think this is not the least evidence of enterprise and ability to overcome difficulty on the part of a man who had never drawn anything before in his life (except a sledge). In all I have heard of Lieut. Shackleton, and in what I have read, I have discovered this, that he never failed to give credit to those who have been his colleagues. He never once hinted that he was the chief man. On the contrary, he seemed to say that he could have done nothing without his colleagues, and that was no affectation of modesty. He would not put himself forward. It was never "I," but "we." I may say this, that I have read a little of the records and reports of Arctic explorations, and I have not found the same modesty in this regard, the same spirit or the same determination to make other explorers share the renown that was gained by those who had explored. We are all grateful to the Society for inviting us here to-night. I assure you that in the years to come those younger than I am will remember this evening, and the opportunity they have had in coming face to face with one who will be remembered as one of the heroes of our time, and who, in his work for truth and honesty, has succeeded in overcoming gigantic difficulties.

Mr. Broadfield gave the toast of "The Chairman," which was cordially honoured.

The Chairman thanked the assembly, and the proceedings terminated.

Proceedings of the Society.*

July 1st to December 31st, 1909.

The 828th Meeting of the Society was held on Tuesday, October 5th, 1909, at 7-30 p.m.

Mr. F. Zimmern, F.R.G.S., in the Chair.

The Minutes of the Meetings held on April 20th and May 22nd were taken as read.

It was announced that, by direction of the Council, letters of sympathy had been sent to the relatives of the following Members who had died during the summer:—Honorary: Mr. E. Delmar Morgan, F.R.G.S.; Ordinary: Messrs. George Hadfield, J.P., C. B. Milnes and Eli Pidd; Associate: Mr. G. H. Seel.

It was announced that the following Members had been elected:—Corresponding: Mr. W. E. Hoyle, M.A., D.Sc.; Ordinary: Messrs. F. Halsall, F.C.A., Wm. Spencer, James T. Morehouse, Mrs. Briggs, Mrs. B. Schill, Messrs. Alfred Peace, W. C. Bacon, John Helm, Herbert Wallwork, R. H. Prestwich, Hugh Stowell, W. J. S. Bythell, B.A., M.D., Mrs. Owen, Mrs. George Bowes, Messrs. L. Emerson Mather, Thomas Norbury, John W. Jameson, Fred Miller, J. G. Clarke, Richard Kalisch, M. St. Goar, F. St. Goar, Alfred Güterbock, Ziba A. Ward, H. A. Baerlein, H. H. Cunliffe, J. H. Bagnall, C. V. Meyer, Wm. T. Stubbs, Gustav Eckhard, James Poole, Arthur W. Keens, Joseph Kyffin, Miss Hilda Nicholas, Miss Edith Lang, Messrs. A. G. Clark, A. G. Radford, A. H. Heycock, Harold Young and H. C. Dixon. Associate: Mrs. Potts, Miss M. E. Jackson, Miss P. M. Garner, Mrs. Ada Ashworth, Miss F. Whittaker, Miss A. G. Shayler, Miss Emily Paterson, Miss Jenny Lund, Messrs. James Warrington, A. Mecklenburg, Woodward Lomas, and J. T. Murray.

Mr. Sandon Perkins, F.R.G.S., etc., gave a Lecture, entitled "Amidst Arctic Snows," being a description of a Seven Months' Journey along the Coast of Greenland, illustrated with a large number of original lantern slides.

On behalf of the Meeting, the Chairman moved that the thanks of those present be given to Mr. Perkins for the very interesting account of his journey which he had delivered and for the fine illustrations shown: the resolution was passed unanimously.

The 829th Meeting of the Society was held on Tuesday, October 12th, 1909, at 7-30 p.m.

Mr. J. E. Bahner, F.R.G.S., in the Chair.

*The Meetings were held in the Geographical Hall, unless otherwise stated.

The Minutes of the Meeting held on October 5th, 1909, were approved.

The death of Mr. John Walkden, C.C., was announced, and it was resolved that the sympathy of the Members present be conveyed to his relatives.

The Chairman mentioned that Friday, October 15th, was the date of the 25th Anniversary of the Foundation of the Society, and reminded the Members that it was proposed to celebrate this Anniversary on November 6th by a Banquet in the Midland Hall.

Mr. M. Seifert gave a lecture on "Germany, its History, its Cities and its Civic Life." Illustrated with a large number of lantern views.

The Chairman moved and it was unanimously resolved that the hearty thanks of the Meeting be given to Mr. Seifert for his very interesting address.

The 830th Meeting of the Society was held on Tuesday, October 19th, 1909, at 7-30 p.m.

In the Chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on October 12th were taken as read.

The Election of the following New Members was announced:—Life: Mrs. J. Howard Hall; Ordinary: Miss A. M. M. Thornely, Miss Woodhall, Messrs. George D. Newton, G. Ellinger, P. T. Johnstone, Alfred Haworth, Frank B. Dunkerley, Robert Guest, and James Harrop; Associate: Miss Shaw, Miss M. Warrington.

The Chairman mentioned that the preceding Friday, October 15th, was the date of the 25th Anniversary of the foundation of the Society, and reminded the Members of the proposed celebration on November 6th at the Midland Hall.

Mr. E. R. Davson, F.R.G.S., addressed the Members on "British Guiana," illustrating his remarks with some original lantern views.

It was unanimously resolved, on the motion of the Chairman, that the hearty thanks of those present be given to Mr. Davson for his interesting address.

The 831st Meeting of the Society was held on Tuesday, October 26th, 1909, at 7-30 p.m.

In the Chair, Mr. F. Zimmern, F.R.G.S.

The Minutes of the Meeting held on October 19th were taken as read.

Madame Gabrielle M. Vassal gave an address on "Life in Annam." Synopsis:—French Indo-China: its extent and outlook; Annam; The Pasteur Institute of Nhatrang; Life in a Coast Village; Dress, Dwellings and Customs of the Annamese Fisher Folk; The Mandarin; The Tchams and their Temples; A Trip to the Hill Country; First

encounter with the "Mois," or Savages of Annam; A Moi Village; Our reception and treatment; Customs and Superstitions of the Mois; A Buffalo Sacrifice; A Funeral; A Court of Justice; Big Game in Annam; A Tiger Hunt. The Lecture was illustrated with original Lantern Views.

On behalf of the Meeting, the Chairman offered hearty thanks to the lecturer for the very interesting account she had given of that little known country.

The 832nd Meeting of the Society was held on Tuesday, November 2nd, 1909, at 7-30 p.m.

In the Chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting held on October 26th were taken as read.

The Chairman mentioned the death of Mr. J. B. Dowdall who had been a member since the beginning of the Society's existence. It was resolved that the sympathy of the Meeting be conveyed to the relatives of the late Mr. Dowdall.

The Election of Seven Ordinary Members was announced:—Miss Marjorie Brockbank, Miss Talbot, Messrs. A. Simon, A. H. Jefferson, Emil Ost, T. W. F. Parkinson and Thos. A. Walton.

Mr. Harold Edgar Young gave a Lecture entitled "Rambles and Scrambles on the Pacific Slope and in the Yellowstone Regions of the Far West." The Lecture was a continuation of "A Wayfarer in Rural Japan." Synopsis:—I leave Japan; The lonely Pacific; Honolulu; San Francisco in Earthquake times; A Home on an Oil Field; Fruits at Fresno; The Yosemite Valley; Breaking the Trail to Glacier Point; Yosemite Falls; Prospecting Cloud's Rest; An Adventure with Bears; With the Red Indians; The Mariposa Grove of big Trees; Back to San Francisco; Across to Salt Lake City; The Town of the Mormons; A new Trail in Wyoming; A Disaster on the North Fork of Snake River; Life on a Cattle Ranch; the wonderful Yellowstone Regions; Geyser Land; Old Faithful; Among the Buffaloes; I sight a Grizzly Bear; The Wild Animals of the Far West. The address was illustrated with original Lantern Views.

Alderman Sir Bosdin T. Leech, J.P., moved, Mr. George Ginger seconded and it was unanimously resolved that the best thanks of the Meeting be given to Mr. Young for his interesting address, and for the splendid Lantern illustrations shown.

The 833rd Meeting of the Society was held in the Free Trade Hall, Peter St., on Friday, November 5th, 1909, at 7-30 p.m.

In the Chair, Mr. Harry Nuttall, M.P., F.R.G.S., with Lieut. E. H. Shackleton, C.V.O., F.R.G.S., on his right and supported on the

Platform by the following members of the Council:—Mr. F. Zimmern, F.R.G.S., Vice Chairman of the Council, Rt. Rev. Bishop of Salford, Rt. Rev. Bishop Welldon, Dean of Manchester, The Vice Chancellor of the University, Alderman Sir Bosdin T. Leech, J.P., Professor W. Boyd Dawkins, F.R.S., J.P., Alderman Thos. Hassall, J.P., Messrs. J. McFarlane, M.A., M.Com., S. Oppenheim, J.P., J. Howard Reed, F.R.G.S., D. A. Little, W. S. Ascoli, F.R.G.S., J. E. Balmer, F.R.G.S., C. A. Clarke, C. Collmann, G. Ginger, J. Howard Hall, T. C. Middleton, J.P., F. S. Oppenheim, M.A., R. C. Phillips, Dr. A. Rée, J. Stephenson Reid, T. W. Sowerbutts, A.S.A.A., Geo. Thomas, Theodore Gregory, J.P., F.C.A., and Harry Sowerbutts, Assoc.R.C.Sc., joined later by two of Lieutenant Shackleton's companions, Sir Philip Brocklehurst and Mr. B. Armytage.

The Chairman, in introducing Lieut. Shackleton, said that only the greatest physical power, the highest courage and a will of iron could have made possible the achievement of Lieut. Shackleton and his companions. Many great English and Scotch explorers have visited Manchester, and now they met to welcome and honour a son of Ireland, who had demonstrated that the heroic age was not passed.

Lieut. Shackleton, who had a most cordial reception, gave his Lecture on "Nearest the South Pole" (see p. 97), illustrating his remarks with photographs taken by the members of the Expedition, shown by Mr. E. W. Mellor, J.P., F.R.G.S., by means of his powerful Electric Lantern.

The Lecture was followed immediately by an exhibition of Kinematograph views illustrating the life of the Expedition. The incidents of the Sledge Journeys were clearly depicted and the penguins and seals in many attitudes. Lieut. Shackleton concluded by paying an eloquent tribute to the work of the various members of the Expedition who, though they did not stand in the limelight as he did, were quite as essential to the success of the Expedition.

The Vice Chancellor of the University moved and Mr. F. Zimmern, F.R.G.S., seconded a cordial vote of thanks to the Lecturer. After this had been carried with acclamation the Lieutenant replied.

Mr. J. Howard Reed, F.R.G.S., moved a hearty vote of thanks to the Chairman and to Mr. E. W. Mellor, J.P., F.R.G.S., and Sir Philip Brocklehurst in seconding the vote said: "I hope you do not expect me to make a speech. I am a neighbour of yours, living close to Manchester, and I have taken this opportunity of hearing my leader give his lecture. I did not expect to be let in for a speech, but I thank him for the way in which he has spoken of us and for the way you have received us."

The 834th Meeting of the Society took the form of a Banquet in celebration of the 25th Anniversary of the foundation of the Society and in honour of Lieut. E. H. Shackleton, C.V.O., F.R.G.S. (see p. 140).

The 835th Meeting of the Society was held on Tuesday, November 9th, 1909, at 7-30 p.m.

In the Chair, Mr. F. Zimmermann, F.R.G.S.

The Minutes of the Meetings held on November 2nd and 5th were taken as read.

Dr. Percy Withers gave an address on "Egypt: a Land of Treasure," illustrating his remarks with lantern slides taken during the visits made by him for excavation purposes.

On the motion of Mr. J. Stephenson Reid, the hearty thanks of the Meeting were accorded to Dr. Withers for his extremely interesting lecture.

The 836th Meeting of the Society was held on Tuesday, November 16th, 1909, at 7-30 p.m.

In the Chair, Mr. Charles A. Clarke.

The Minutes of the Meeting held on November 9th were approved.

The Chairman announced that the Secretary had conveyed the Congratulations of the Society to the Rev. S. A. Steinthal on the occasion of his 83rd Birthday, which took place the previous day (November 15th).

Regret was expressed at the deaths of Mr. Adam Laidlaw, an old Member, and Mr. J. H. Nodal who, though not a member recently, was one of the Members of the First Council elected, and gave valuable assistance in the early years of the Society, and it was resolved that the sympathy of the Members be sent to the relatives of both.

The Chairman announced the Election of five Ordinary Members, as follows:—Messrs. C. Edwards, Wm. Thomson, F.R.S., R. S. Harker, John Walker, and F. Bettley-Cooke.

Mr. James Stephenson Reid, Governor of Nicholls Hospital and a Victorian of the Society, kindly and at short notice gave a Lecture on "The Western Islands and Highlands of Scotland." The address was illustrated with a large number of very fine lantern views.

The Chairman, after giving a short description of the Victorians and their work, moved that the best thanks of the Meeting be given to Mr. Reid, and the motion was passed unanimously.

The 837th Meeting of the Society was held on Tuesday, November 23rd, 1909, at 7-30 p.m.

In the Chair, Mr. F. Zimmermann, F.R.G.S.

The Minutes of the Meeting held on November 16th were taken as read.

Mr. S. Yamanobe read a paper on "Osaka, its rise and development," illustrated with lantern slides (see p. 115).

On the motion of the Chairman, seconded by Mr. C. A. Clarke, it was resolved that Mr. Yamanobe be thanked for his interesting paper.

The 838th Meeting of the Society was held on Tuesday, November 30th, 1909, at 7-30 p.m.

In the Chair, the Rt. Rev. the Bishop of Salford.

The Minutes of the Meeting held on November 23rd were taken as read.

The Election of Mrs. Stordy and Mr. H. B. Rudolph as Ordinary Members was announced.

The Rev. Cowley Clarke gave an address on "Greece." Synopsis: Corfu; Corinth; Athens in the days of Pericles. of St. Paul; Marathon; Argos; Mycenae; Olympia; Athens of to-day. The address was illustrated with Lantern views.

Mr. George Ginger moved, Mr. J. Howard Hall seconded and it was unanimously resolved that a hearty vote of thanks be given to the Lecturer for his interesting address.

The 839th Meeting of the Society was held on Tuesday, December 7th, 1909, at 7-30 p.m.

In the Chair, Mr. C. A. Clarke.

The Minutes of the Meeting held on November 30th were taken as read.

The Chairman referred to the loss by death of two Members, Mr. A. J. S. Bles, J.P., Consul for the Netherlands, who had supported the Society for 21 years, and Mr. Wm. Turner who was present at the previous meeting, and then moved that the sympathy of the Members present be conveyed to the relatives of the two deceased members, and the acquiescence of those present was signified by all rising.

The Rev. W. Thomas gave an address entitled "Rambles in Goethe's Country," illustrated with many fine lantern views.

On the motion of the Chairman, the unanimous thanks of the Meeting were tendered to the Lecturer for his very interesting and instructive paper.

The 840th Meeting of the Society was held on Tuesday, December 14th, 1909, at 7-30 p.m.

In the Chair, Mr. George Ginger, and later, Mr. George Pearson.

The Minutes of the Meeting held on December 7th were taken as read.

The death of Alderman A. McDougall, one of the Original Members of the Society, was mentioned and a resolution of sympathy with his relatives was passed.

The Election of Mrs. Gumbrell as an Ordinary Member was announced.

Mr. Charles B. Howdill, A.R.I.B.A., gave a Lecture on "Servia and its People," illustrated with a very large number of fine Lantern Views.

On the motion of Mr. Pearson, the Chairman, the members present passed a hearty vote of thanks to Mr. Howdill for his interesting address.

The 841st Meeting of the Society was held on Tuesday, December 21st, 1909, at 7-30 p.m., and took the form of a Lecture to the children of the Members.

In the Chair, Mr. J. Howard Bentley, F.R.G.S.

Mr. Geo. H. Warren (Victorian) gave a Lecture on "Arctic Exploration," with special reference to the discovery of the North Pole, illustrating his remarks with a large number of Lantern Slides.

On the suggestion of the Chairman a round of hearty applause was given by the children to show their appreciation of Mr. Warren's interesting Lecture.

List of Maps, Books, Journals, etc.

ACQUIRED BY THE SOCIETY FROM JANUARY 1st TO DECEMBER 31st, 1909.

MAPS.

EUROPE.

- New Orographical Map of the British Isles. Compiled under the direction of H. J. Mackinder, M.A. Scale 1/728,640. London: Edward Stanford, 1909. (Price, Coloured Sheets, 16/-.) *The Publisher.
- South Britain or England and Wales, by Thos. Kitchin. London: Robt. Sawyer & John Bennett, 1777. *Mr. C. Roeder.
- Cary's Traveller's Companion, or, A Delineation of the Turnpike Roads of England and Wales. London: John Cary, 1791. *Mr. C. Roeder.
- A New Map of the River Thames from Oxford to London, with illustrated Guide by Henry W. Taunt. Oxford: Henry W. Taunt, 1873. *Mr. C. Roeder.
- A New Map of the County of Devon. Divided into Hundreds. 4 miles to 1 inch. London: C. Smith, 1804. *Mr. C. Roeder.
- Ordnance Survey of England. Sheet 68 Clitheroe. Scale 1 inch to 1 mile. Southampton: 1906. *Colonel H. T. Crook, J.P., C.E.
- Ordnance Survey of England and Wales. (Large Sheet Series.) Sheets 43 Flint, 51 Llangollen. Scale 1 inch to 1 mile. Southampton: 1909. *Colonel H. T. Crook, J.P., C.E.
- Ordnance Survey of England and Wales. (Large Sheet Series.) Sheets 8 Preston, 9 Leeds and Bradford. Scale 2 miles to 1 inch. Southampton: 1908. *Colonel H. T. Crook, J.P., C.E.
- Maps of the Counties of Chester, Cumberland, Durham, Lancaster, Northumberland, Westmorland, and York. London & Manchester: Pigot & Co. *Mr. C. Roeder.
- Map of Lancashire; Population Table; Distance Table; and Chart of Inland Navigation. Liverpool: William Wales & Co., 1824-5. *Mr. C. Roeder.
- Township of Manchester. 11 Sheets, Nos. 10, 11, 14 to 22. Original Survey, by Richard Thornton. Published by Joseph Adshead, 1850. Corrected Feb. 17th, 1851. *Mr. C. Roeder.
- Norway. Nordre Trondhjems Amt III. Scale 1/200,000. *Norges Geografiske Opmaalning.
- Norway. Topografisk Kart over Kongeriget Norge. 38 A, 25 B, 46 B, 9 D, K 8, L 10, M 13. Scale 1/100,000. Kristiania: Norges Geografiske Opmaalning. *Norges Geografiske Opmaalning.

* The Donor.

- Norway. Bilag til Generalkart. B 14. Scale 1/100,000. *Norges Geografiske Opmaaling.
- Norway. Bilag til Generalkart. B 9. Scale 1/50,000. *Norges Geografiske Opmaaling.
- Norway. Special Kart. B 2, B 34, B 51. Scale 1/50,000. *Norges Geografiske Opmaaling.
- Norway. Kristiania Omegn. Sheets III. and IV. Scale 1/25,000. Kristiania : Norges Geografiske Opmaaling. *Norges Geografiske Opmaaling.
- Namentreue (idionomatographische) Länderkarten Blatt 1. Russland. in flächentreuer Kegelhumpfprojektion mit 2 abweitungstreuen Parallelkreisen. Herausgegeben von Prof. Dr. A. Bludau und Otto Herkt. Scale 1/4,500,000. Berlin : Carl Flemming, 1909. *The Publisher.
- Turkey. Scale 1/250,000. New Sheets : Ismid, Jumaa-i-Bala. Revised Sheets : Constantinople, Adrianople, Rodosto, Vize. London : War Office, Geographical Section, General Staff, No. 2097. *The Director of Military Operations.

ASIA.

- Southern Bundeicund and Saugor. Scale 4 miles to 1 inch. London : John Walker, 1849. *Mr. C. Roeder.
- Province of Fu-Chien. Scale 1/1,000,000. G.S., G.S. No. 2165. *Director of Military Operations.

AFRICA.

- Map of Africa, to illustrate the progress of surveys and explorations. Scale 1/20,000,000. Geographical Section, General Staff, No. 2436. London : War Office, 1909. *The Director of Military Operations.
- Gambia. Scale 1/500,000. G.S., G.S. No. 2447. London : War Office, 1909. *The Director of Military Operations.
- Carte de L'Afrique Occidentale Française, dressée par A. Meunier et E. Barralier. Flle. No. 1 Dakar; No. 4 Konakry. Echelle de 1/2,000,000. 2nd Edition. Paris : Service Géographique des Colonies, 1908. *The Chief of the Service.
- Africa, 1/250,000. Gold Coast—Tarkwa. Sheet 72 Q. and Part of 72 W. G.S., G.S. No. 1764. London : War Office, 1909. *The Director of Military Operations.
- Northern Nigeria. Scale 1/2,000,000. G.S., G.S. No. 2461. London : War Office, 1909. *The Director of Military Operations.
- Index to Map of Northern Nigeria. G.S., G.S. No. 2461. London : War Office, 1909. *The Director of Military Operations.
- Africa, 1/250,000. Northern Nigeria. Sheet 62 M. Zungeru. G.S., G.S. No. 1764. London : War Office, 1909. *The Director of Military Operations.
- Yola Province, Northern Nigeria. Sheets 1 and 2. Scale 1/250,000. G.S., G.S. 2311. London : War Office, 1909. *The Director of Military Operations.

- Africa, 1/500,000. Southern Rhodesia. Sheets 116 II. Urungwe; 116 III. Victoria Falls; 116 IV. Gwelo; 117 I. Salisbury; 117 III. Umtali; 121 II. Bulawayo; 121 I. Victoria. G.S., G.S. No. 2416. London: War Office, 1909. *The Director of Military Operations.
- Nyasaland Protectorate, Africa, 1/1,000,000. Part of Sheets 105, 111, 117. G.S., G.S. No. 2136. *The Director of Military Operations.
- Positions, Azimuths and Length of Sides of the Uganda Boundary Commission Triangulation (1907-1908) from 1° South to 2° North Latitude along the 30th Meridian East of Greenwich with Three Charts. London: G.S., G.S., War Office, January, 1909. *The Director of Military Operations.
- Uganda-Congo Commission, 1906-1908. Sheets: Lake Albert, Bulegga, Fort Portal, and Lake Edward. Scale 1/250,000. Geographical Section, General Staff, Nos. 2471 and 1764. London: War Office, 1909. *The Director of Military Operations.
- British East Africa. Uasin Gishu Plateau. Rapid Allotment. Sheets 1, 2, 3, 4, 5. Scale 1/62,500. G.S., G.S. No. 2398. *The Director of Military Operations.
- Jubaland. (Africa, 1/1,000,000. Parts of Sheets 87, 88, 94 and 95.) G.S., G.S. No. 2318. *The Director of Military Operations.
- French Somaliland. Scale 1/1,000,000. G.S., G.S. No. 2394. *The Director of Military Operations.
- Carte de la Côte Française des Somalis dressée par A. Meunier. Flle No. 1 Djibouti. Echelle de 1/500,000. Paris: Service Géographique des Colonies, 1908. *The Chief of the Service.

AMERICA.

- Canada. Topographic Map. Sheets Nos. 13 Winchester, 16 Russell, 17 Cornwall, 18 Alexandria, 19 Thurso, 20 Hawkesbury, 21 Huntingdon, 22 Laval, 23 Lachine, 25 Vaudreuil. Scale 1/63,360 or 1 inch to 1 mile. Geographical Section, General Staff. No. 2197. *The Director of Military Operations.
- Canada, 2 miles to 1 inch. Ontario, Brockville. Geographical Section, Geographical Staff. No. 2336. London: War Office, 1909. (Two copies.) *The Director of Military Operations.
- Central America. Scale 1/1,705,000. T.S., G.S. No. 2292. London: Topographical Section, General Staff, War Office, 1907.

ATLASES, ALBUMS, PHOTOGRAPHS, &c.

- Primary Atlas of the British Empire. A series of 72 Coloured Maps and Diagrams. Edited by George Philip, F.R.G.S. Prepared under the direction of the League of the Empire for use in connection with their Series of Imperial Text Books. London: George Philip & Son., Ltd. *The Publishers.
- New School Atlas of Comparative Geography. A Series of 72 Coloured Physical, Political and Commercial Maps and Diagrams with a Consulting Index. London: George Philip & Son., Ltd., 1909. *The Publishers.

- Atlas to accompany Walker's Geography. London : Darton & Harvey, 1795.
*Mr. C. Roeder.
- Stieler's Atlas of Modern Geography. 100 Maps, with inset Maps, engraved on Copper. Published by Justus Perthes' Geographical Institute, Gotha. Adapted for the use of the English-speaking Public by B. V. Darbishire, M.A., Oxford. Ninth Edition. London Agency : Asher & Co., 1909.
- An Illustrated Descriptive Atlas of the British Empire (and Japan), Its Features, Resources, Commerce, Industries, and Scenery, together with the Physical and Economic Conditions of the World by W. Bisiker, F.R.G.S., Diplomé in Geography of Oxford University. London : The Geographical Publishing Co., 1909. *The Publishers.
- Philips' Geographical Pictures. A series of 20 Plates, enlarged from actual Photographs direct from Nature, illustrating geographical features. Edited by P. H. L'Estrange, B.A. Series I. London : George Philip & Son, Ltd. (Price 21/- net, per set in box. Single Pictures 1/3 each net.) *The Publishers.
- Black's Geographical Pictures. Alpine Series from Photographs by L. Edna Walter, B.Sc., A.C.G.I. Introductory Essay, with descriptions of pictures and questions by H. J. Snape, M.A. Packets Nos. 1, 2, 3. London : Adam & Charles Black. *Miss L. Edna Walter.
- "In Brightest Africa." Views of Madeira, Cape Town, and a Union-Castle Liner. (Mounted in one Frame.) *The Union-Castle Mail Steamship Company Limited.

 BOOKS.

GENERAL.

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THE MANCHESTER GEOGRAPHICAL SOCIETY.

Rules.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science : as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisations and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object, and shall not make any dividend, gift, division, or bonus in money unto or between any of its members.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1. 1s., or he may compound by one payment of £10. 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members. Any member, whose subscription is in arrear for two years shall not be entitled to receive the Journal of the Society.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

Ordinary Meetings.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of the proceedings shall be as follows :—

- (a) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.
- (b) Presents, whether of money, books, maps, charts, instruments or specimens made to the Society to be announced.
- (c) The election of new members to be declared and the names of candidates to be read.
- (d) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

Annual Meetings.

30. The Annual Meeting of the members shall be held at such time and place as the Council may determine.

31. Fourteen days' notice of such meeting shall be sent to every member within the United Kingdom who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

Special General Meetings.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by 20 ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

The Council.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the most efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

President and Vice-Presidents.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

Chairman of the Council.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and Officers, and to summon, when necessary, special meetings of the Council and of Committees.

Treasurer.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the book of accounts shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

Secretaries.

49. The duty of the Honorary Secretaries shall be :—

- (a) To conduct the correspondence of the Society and of the Council.
- (b) To attend the meetings of the members and of the Council, and minute their proceedings.

- (c) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission, and the papers communicated to the Society, which have been directed by the Council to be read
- (d) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies, and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society, and to act under the instructions of the Council.

The foregoing Rules, as now amended, were approved and adopted at a meeting of the members of the Society, of which due notice had been given to the members, held in the Town Hall, Manchester, Wednesday, October 3rd, 1894.

(Signed) GEORGE, President.
 S. ALFRED STEINTHAL, Chairman.
 F. ZIMMERN, Honorary Secretary.
 JAS. D. WILDE, M.A., Honorary Secretary.
 ELI SOWERBUTTS, Secretary.

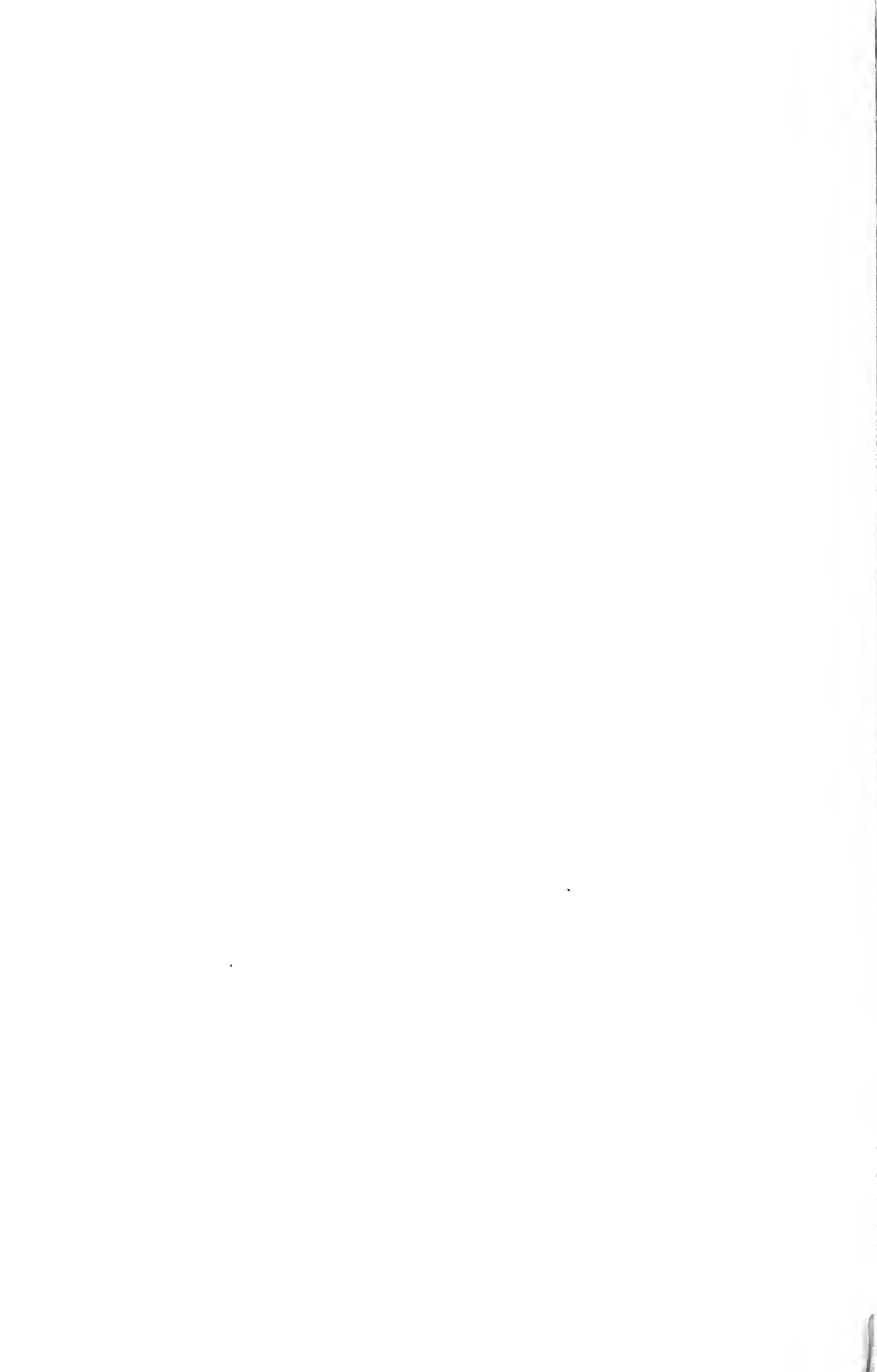
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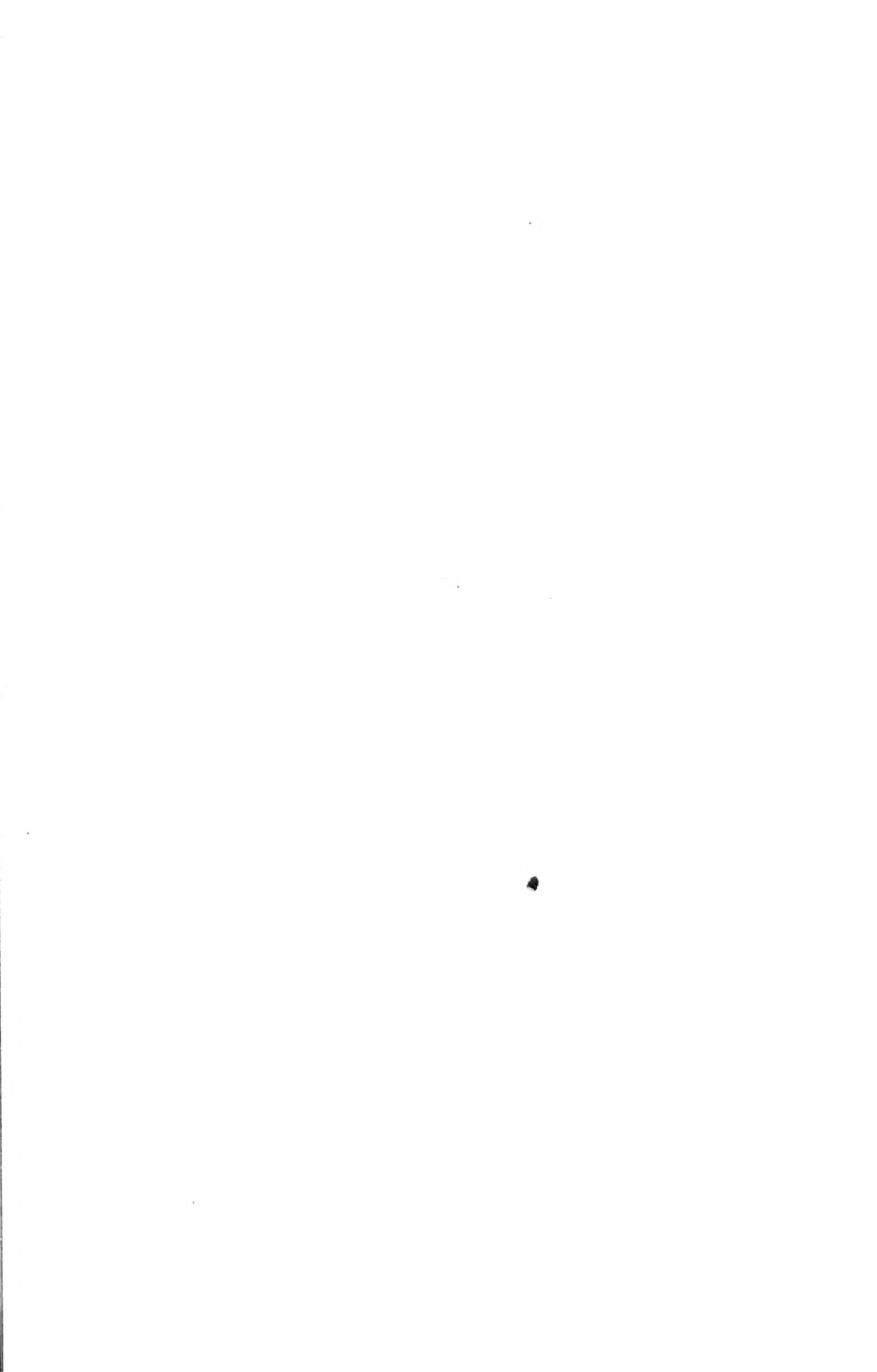
It is hereby certified that this Society is entitled to the benefit of the Act 6 and 7 Vict., Cap. 36, intituled "An Act to exempt from County, Borough, Parochial, and other Local Rates, Lands and Buildings occupied by Scientific or Literary Societies."

Seal of Registry of
 Friendly Societies.
 E. W. B.

This 15th day of January, 1895.









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